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Technology strategy surveys as an aid to change in publishing

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Abstract

The so-called information revolution has reached the stage where the publishing industry had joined in, beginning a transformation into electronic forms as computer technology impacts in a more significant way on a relatively traditional industry. The transformation required is, over the long term, essentially a change from mass manufacture to flexible manufacturing and requires an increased marketing orientation. Technology is the enabler both of the product and, in part, of organizational change towards innovation cultures provided it is focused on the market and technology users, both within and outside the firm. This paper examines the use of an IT strategy survey of managers and key staff within a publishing organization where they have been selected from both IT and business functions. It demonstrates the method may be useful in creating an awareness of issues to be confronted to create the transformation required not just in terms of IT, but also marketing orientation and organizational modernization. It is argued that this awareness is a necessary adjunct to the formulation of corporate strategy in publishing companies as the electronic era gathers pace.

Introduction

Although the computer has been heralded as the harbinger of a new age of information and has been with us for around half a century, its impact on the publishing industry until recently has been restricted mainly to such functions as order processing, accounts and then as an aid to production of paper products. Now, however, the proliferation of the personal computer has brought new business opportunities for publishers as well as threats for the existing traditional formats. The need for transformation is apparent to many. At the same time, new skills are required for new products and with them more flexible team players constituting more modern industrial organizations. It is in essence a time of change and publishing organizations have begun the necessary transformation process while guarding against the high risks involved.

At the same time there is a process of convergence occurring in the industry as distinct market areas begin to overlap and publishing companies realize they face competition from telecommunication suppliers and hardware companies, from providers of education and entertainment, as well as from software developers. While at times pronouncements about a brave new world of multimedia appear to have been exaggerated, it is clear that for publishers there is a real risk of being left behind, watching the erosion of their traditional businesses. So change is necessarily on the business agenda across the publishing world.

However, for a number of organizations this change is handled almost exclusively at the apex of the firm via corporate strategy formulation. Typically the process is financially driven with the need to maintain the return for shareholders. As certain sectors begin to see their mature businesses falter, the tendency is to approach the new era of electronic publishing less with a sense of vision than with the methodology of gap analysis. New business is required to fill gaps in revenue forecasts which may occur if there is no diversification. While there is nothing wrong in this as a starting point for developing new business, there are dangers of failure if the top-down determination of goals for new revenue is not accompanied by methods to inculcate the appropriate culture both in key skill areas and, more generally, across the firm as a whole.

Of course, the key driver for information technology strategy particularly in publishing should be the market rather than the technology. Recent interviews with business analysts defining their new role emphasize this within industry generally. John Seager, an analyst with the systems consultancy CMG, commented, 'The main thing is to always think "customer first" – you may want to do something in a particular way but you have to ask whether it will benefit the customer.'[1] But another business analyst indicates the necessary intermediary role of non-IT staff in organizations aiming to reach customer needs. 'We contribute 20% of the solution to a company's problem, but 80% comes from within the organization itself', he says.[2]

In fact one recent study in Canada has shown that there is a long way to go in closing the gap between IT reality and the external environment of the firm. 'Analysis of individual companies that rated a particular external force as the most important influencing factor in their business environment did not provide any conclusive evidence to suggest that the IT systems of the companies are aligned to meet or challenge that external force. The survey findings thus indicated that there is a mismatch between IT systems and the overall external concerns (forces) of the company'.[3] Nevertheless the same study also concludes: 'Despite the lack of alignment of IT systems with the external environment in a large number of companies there is strong evidence to suggest that organizations are firmly committed to the use of IT particularly in their internal operations.'[4] What is required is a shift from an internal focus to a more externally based one.

One of the new characteristics of information technology (since the personal computer revolution) is that it operates throughout the fabric of most firms and can in a sense be viewed as an integrating force both literally, in terms of the means of communication (e.g. via email), and culturally, in the adoption of a technology ethos where everyone has a level of awareness of technology and a desire to be listened to concerning its development. While this ethos has not arrived for every company, ten years ago it would have been almost unthinkable. In those days the computer was almost exclusively the domain of the IT professionals and the main issue was how to get them to do or redo what was needed. The change is essentially one of empowerment for the users.

Thus, moves to involve non-IT staff in the formulation of IT strategy bridges the gulf between the IT reality and external factors for the firm. Managers and executives in other departments mediate initially between the customer interface and the IT department. Ultimately however more radical structural change will follow. As one recent article commented: 'Without doubt, the central IT function has lost its structure, as IT personnel are farmed out to business units. The main impact of such devolution is a clear departure from traditional programming skill sets alone being commercially viable.'[5]

In approaching the issue of change required in terms of organizational culture, publishing organizations have the opportunity to draw benefits from this new state of affairs. While good corporate communications (to ensure relevant knowledge about strategy is imparted) remain vital, the use of surveys allows for a more interactive process where managers and staff are forced to consider the future for themselves, and, in so doing, begin to prepare for the changes ahead. What is more, the feedback from the survey forms can allow for a more detailed analysis of the issues to be confronted which can be explored more thoroughly through interviews and focus groups and ultimately fed back into corporate strategy.

The choice of a survey relating to information technology strategy makes use of the increased general awareness of technology within modern firms while at the same time tackling one of the key enablers of the new business of electronic publishing – the technology itself. However, the extent to which change should be technology-driven or market-driven, and opinions regarding this, may at times reflect vested interests of the current organizational structures (tending to underplay the significance of the role of the market), so it is important to be wary of this at all times in the analysis of replies to any questionnaire.

This paper examines the use of one such survey in a technical/scientific publishing organization. First the analytical context for the transformation processes involving technology is examined through key studies and articles. This guides the expectation of issues likely to arise in the survey and helps guide its construction. Next the survey is piloted, modified and carried out. Subsequently more in-depth interviews are undertaken and a focus group is run. A transcript of the focus group meeting is subjected to textual analysis. The resulting data are analysed and discussion arising results in conclusions and recommendations on the one hand for similar organizations to investigate, and, on the other, for the use of the method more generally in assisting in the transformation process the publishing industry requires.

Research Methodology

Desk research based on key texts related to information strategy, as well as in-house corporate literature, such as magazines and strategy documents related to the company to be surveyed, were examined to establish a list of common themes related to the development of information technology practice in the 1990s. Questions derived from these themes were grouped into six categories: people/culture; competitive advantage; facets of information technology in general; strategy formulation; the current state of information technology in the specific company to be surveyed; other organizational issues. In all, over 100 questions were created. Examples of the questions are:

To what extent do you think information systems staff should be trained in the general nature of the business itself?

What do you see as the potential for customized products for the company?

What new IT applications have been developed in recent years? How useful have they been?

How does the company rate against the competition in terms of its use of information technology?

Do you see the company as an organization preparing for little change or great change?

In what way?

In conjunction with two managers from the firm the full list of questions was then modified to allow respondents to rank key factors in certain cases, or to designate the significance of issues using either 3-point, 4-point or 5-point scales according to suitability for each item under investigation. The questionnaire was piloted with the managers and confusing items dropped or modified. Full validity and reliability tests were not carried out and each item tested was treated independently rather than assuming that values could be accumulated to give any specific index of attitude. Future use of the survey could improve upon this approach but the active involvement of the managers was seen to be of considerable benefit in guiding the relevance of the survey questionnaire. Examples of final questions used include:

To what extent should the company in the next 5 years focus attention for its information systems on its approach to the marketplace or on internal improvement of current activities of the firm? (Choose one)

(a) Strong focus on approach to the market
(b) Slight focus on approach to the market
(c) Equal balance
(d) Slight focus on internal improvements of current activities
(e) Strong focus on internal improvements of current activities

To what extent do you think the widespread development of 'hybrid managers' (equally at home with information technology and business needs) should be prioritized in the company in the next five years? (Choose one)

(a) Critical concern
(b) Important and useful
(c) Relatively unimportant
(d) Counterproductive

In all eight questions were asked on the final survey based on the initial list of over 100 from the desk research. The original questions were used as the basis of follow-up interviews but they also allowed for open discussion and recordings were made and converted into transcripts.

Managers and key staff from four operating units within the company were chosen to give a representative sample of business functions and IT posts. 36 responded out of the sample of 90 representing 40% of those invited to participate. 16 of these agreed to take part in more in-depth interviews using the original stock of questions. Each interview took between 25 and 45 minutes and all were recorded (although it was made clear that confidentiality would be adhered to in all cases).

A focus group was established within three operating units of the company and involving mainly staff with a high involvement or interest in information technology. A transcript of this focus group meeting was then submitted to textual analysis to identify key themes and concerns of the staff present related to a group of the original questions established via desk research.

The results were then analysed to discover key issues of concern and these, once identified, together with the qualitative data obtained from interviews were used to provide suggested recommendations for the firm in its management of information technology and strategy. In a number of cases a comparison between different groups e.g. IT managers and non-IT managers, was made.

Issue expectations arising from desk research

Rees[6], reporting in the *Sunday Times* (London) on the newspaper's IT for Business Excellence Awards 1992 commented:

'This is the key to breeding business excellence. Far from being implemented in isolation to meet short term goals, IT needs to be woven into the fabric of an organization, acting as a catalyst for fundamental change to combat increasing competitive pressures. Then critical information can be shared – allowing companies to strip out layers of management, improve quality and productivity, make better decisions and strengthen their focus on customer services'.

The idea of IT as an integrating factor was central to this study and its anticipated outputs for the firm and the issue of sharing information ultimately became a question of power and ownership for the users. At the same time the use of IT was related clearly to the main management of trends of improving quality, and productivity and flattening organizational structures.

Through the late 1980s the need for increased business orientation was finding favour within the information technology practitioner associations and bodies such as the British Computer Society championed the role of hybrid managers who were trained in all aspects of the business and understood the technology. On the one hand this may have been intended to reinforce career development prospects of members who had traditionally been considered to have been relegated to the business B team; however, on the other, it strikes a chord within publishing circles where there has been a fear that new business driven by technologists might be insufficiently commercial. The need seems to be for more rounded flexible team players bridging the gulf between subcultures such as IT and user departments in publishing organizations.

It became important that IT should not be allowed to operate in a form of business vacuum. The need for active intervention and careful consideration of issues related to the latest technological developments was emphasized by Michael S. Scott Morton[7] in his report of the Massachusetts' Institute of Technology 'Management in the 1990s' Research Program. '(The) Program has shown that just to automate what is today being done is to grossly misuse the potential of the new technologies...'

What is more Scott Morton[8] indicated that much of what was required was not so much a question of technology as of change management and organizational issues. 'The Programme has shown that it may take different forms of organization to fully exploit the new information technologies. At the level of the individual firm, the problem will be to overcome the resistance to change, both by individuals who feel threatened by such changes and by those who doubt the potential returns from the large investments necessary in new technologies.'

The fuller transformation needs to be to a large extent marketing-led for those entering electronic publishing whether with online products or CD-ROMs including multimedia packages. To an extent this is in fact an issue of market making rather than following the market and this feature is reflected for example in a number of governmental initiatives to prime the market, e.g some of the programmes sponsored by the European Union to develop multimedia.

In a way this observation harmonizes with the views of one working paper[9] on the development of strategic information technology:

'...to gain competitive advantage from information technology, firms would do better to adopt principles from theories of industrial innovation rather than from the traditional treatises on information systems management...'.

Certainly innovation and innovation culture studies are relevant to publishing as it embarks on a transformation process and it is notable that innovation has taken on board the need to involve lead users in industry to develop new products, further emphasizing the need for marketing orientation. In fact there is fast arising a coalescence of interests between the information specialists (concerned with usage and markets) and those involved in computing (concerned with technology) even if academically they are often placed in different faculties at universities. The change in commercial reality is actually beginning to shape the evolution of the related science and technology.

A review article by Benjamin and Blunt[10] notes the reason why this coalescence is necessary by implication when the authors assert that the benefits of IT implementation have been relatively slow in coming because organizational change is not adequately managed. Changes based on pure technological advance have generally been more rapid than expected whereas ones involving culture change have been slower that expected.

The kind of organizational change anticipated takes us back to the concept of the hybrid manager but as part of a broader trend noted by Koji Okubayashi[11] in his analysis of the issues being addressed by Japanese personnel managers: 'The new organization of the enterprise will be flexible with some overlapping of roles.'

The assertion is quietly stated, almost understated, but it is notable that in the 1990s a number of the large multinationals in publishing have started taking the issue of job rotation seriously as a strategic issue and not just for the preparation of their most senior management teams. A broader base of skills is a necessity.

Overall, this literature provides a rich source of issues based on expert opinion and ample basis for drawing up the list of over 100 preliminary questions. What was then to be tested was whether the expected issues were in tune with the common-sense reality of the managers and key staff in the existing publishing business.

These expected issues included the following:

1. IT specialists will shift from mainly mainframe and minicomputer centred work to focus even more on networks of personal computers.
2. IT specialists will gravitate from processing of customer payment data to management of corporate data and to delivery and production system support.
3. Customized products will be developed using computer technology and become commercially viable.
4. IT personnel will ultimately be redeployed to user departments once comprehensive IT and business plans have been successfully implemented.
5. Organizational culture will be modernized and will be able to be characterized as an innovation culture.
6. The development of hybrid managers will become an important factor in human resource management across the company.

Research data and analysis

A key concern ranked highest among a list of factors important to the formulation of information strategy was 'aligning information systems with business strategy'. The textual analysis of themes from the focus group also placed this very high, second only to discussion concerning 'customer needs and marketing'. The point was continually reiterated in follow-up interviews although it was noticeable that the point was made most strongly by those in business functions. Within IT functions other technical issues tended to predominate and indeed one IT staff member commented on his relative ignorance concerning business strategy and the broader aims of the organization beyond his functional specialism.

Other factors which rated highly as important to the formulation of information strategy were 'identifying opportunities for the use of IT' and 'user awareness and education'. Both of these imply the need for a broad approach to IT and its use across the firm as a whole and support the idea of creating an 'innovation culture' and the necessary involvement of staff in general.

A question regarding trends likely to develop highlighted the view that 'commercial products would become commercially viable', that 'IT would be a significant driver of strategy via informed users generating ideas at all levels' and that 'IT specialists would gravitate from processing of customer payment data etc... to the management of corporate data and to the electronic delivery systems of products'. All of these trends suggest an awareness of considerable change in the offing and a belief that the company's future depends on its ability to adapt to the electronic publishing environment.

Another question showed the general view that whereas the company was average compared to competitors in its use of internal systems it was ahead in approaching the market. This was a mark of the change required in shifting from an internally focused technology strategy to an externally focused one with an increased marketing orientation.

The next question asked respondents to determine how important it was for the company to develop 'hybrid managers'. By far the greatest number believed the development would be 'important and useful'. Of the remainder most decided it was even more important and declared it a 'critical factor'.

A question asking respondents to rank six factors in order of importance as strategic objectives grouped the following as most important: 'competitive advantage'; 'provision of management information' and 'improvement in service to customers'. It would be tempting to view the need for management information as part of the internal systems emphasis that has been pervasive in the past, acting as a counterbalance against the increasing need in the strategy for external orientation. However this would be misleading as the management information reflects the requirement of staff internally to improve their knowledge of the firm's operation in the external environment. This point was emphasized by a number of the managers in follow-up interviews who stressed the need for the company to be able to react more quickly in a more volatile environment with changing markets and fierce competition.

Finally there was a general view that corporate IT budgets should increase slightly or markedly reflecting an awareness of the increased importance of technology in the future business.

There was room for comments on the survey questionnaire and these included a number such as:

'Much more communication between centralized development staff and departmental staff is needed before strategies are formulated'.

This suggests a tension between the IT and non-IT cultures but it also suggests there is an improvement needed in planning procedures to cross the boundaries in strategy formulation between senior staff and department staff. The issue of communications is an essential one to address in striving for a modernized innovation culture.

This point is emphasized in a recent paper based on a study of strategic information management in the pharmaceutical industry. The point holds for other information intensive organizations. '... soon business units will begin to operate more and more as parts of communication networks... This emphasizes the quality of human resources management in an organization which can be achieved by linking information systems and human resources management strategies.'[12] This linkage across the value chain is an essential development required in publishing companies as IT strategy is brought up to date.

Another comment arising from follow-up interviews was that 'there is no overall philosophy or development plan'. There may be truth in this comment or again it may reflect the need to improve communications. Whether or not the development plans were in place beyond the setting of financial goals it is clear that the philosophy of change was not fully shared across the organization at this stage.

Conclusions and recommendations

A number of recommendations can be put forward for further investigation by publishing organizations. These are:

1. Increase IT budgets proportionately year on year for the foreseeable future (but this by itself without prioritization and organizational change will be an inadequate response).
2. Integrate IT strategy formulation more thoroughly at all levels emphasizing not just a strategy for using IT, but how to make the use of IT 'strategic'. This calls for the adoption of champions at senior management level for both technological and organizational change and a maximization of user involvement. Integrate these processes with all aspects of corporate strategy formulation, maximizing the focus shift towards factors external to the firm, especially the market.
3. Embark on a general education programme for managers in (a) Information technology generally and electronic publishing in particular; (b) the changing market and how it can be influenced; (c) the competition, employing such methods as in-house literature, seminars, demonstrations. Appoint a senior manager as champion of the programme.
4. Continue improvements of corporate communications by (a) ensuring all but the most sensitive corporate information cascades through the organization in a periodic and synchronized fashion; (b) ensuring the appraisals procedures follow the same pattern of timing and cascades down so that individual objectives relate effectively to the corporate business mission and everyone is pulling together with an awareness of general objectives for the firm.
5. Target a group of individuals for development as IT hybrids and manage their development in the organization with senior management involvement. At the same time link them to groups of managers across business functions to shadow developments and share information, and get closer to customers.
6. Formalize user involvement as an issue for IT related to the strategy formulation along the lines of developing an innovation culture. Invite improvements and offer rewards/incentives.

What is clear from these recommendations (aimed to tap the creative resources of staff as a whole for the new business) is that basic corporate strategy and being strategic should not be distinct. Many of the inputs in an innovation culture will arise from the operational level. However the impetus for change and drawing on these resources, just as for the successful implementation of total quality management programmes, must come from the top.

What is harder to assess is the validity of this approach to assist change. Further research could examine specific components of the views arising from the survey. For example the efficacy of using hybrid managers could be assessed as a topic in its own right once the programme has been implemented – probably via interviewing those who take on such roles, their managers/directors, and assessing specific outputs arising from their work, particularly with regard to marketing orientation.

Another area for further investigation would be the efficacy of adopting an innovation culture. This would require careful definition and analysis and would probably require the methodology of culture audits to be used. Again the important measures would need to be company outputs in the form of successful new products and new, profitable revenue streams. Again in common with other leaders in innovation, customer contact at the earliest stage of product development will be essential.

However at the very least the method demonstrates the level of interest in future developments within the middle management and key staff in publishing and the desire for further involvement. The enthusiasm for change can be harnessed to overcome the likely resistances in the current order to allow such organizations to prepare more thoroughly for the electronic publishing era. The use of surveys to assist this change can be compared to the use of questionnaires in other areas e.g. customer satisfaction surveys to improve customer service. The act of conducting the survey has as its output useful intelligence but the process is also valuable due to the involvement it can create and the impact this can have on motivation and loyalty. Nevertheless, if, once having conducted the survey, there are no changes or initiatives made there are risks that the final outcome could be counterproductive, having raised expectations for change initially. So the use of surveys has to be fitted into a more general strategy for change particularly with regard to the adoption of an innovation culture which is fast being seen as indispensable to the industry's future development.

Perhaps part of the recipe for success lies in the pursuit of corporate image critical to senior management's success ratings in the market (both shareholders and customers) and requiring the organizations to harness technological strengths at all levels. As one paper recently reported, '...some representation in the electronic information marketplace may be important in conveying the image of a dynamic and forward-looking publisher with an exciting portfolio of products...'[13] Change is on the agenda for publishers. In fact the process has begun but some of the most effective contributors to a more effective information strategy culture are waiting in the wings, often in business units rather than in the IT department. The use of an IT strategy survey could help move them centre stage.

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Setting the context for teaching business information

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Paper presented at Improved Practice and Skills in the LIS Field, Royal School of Librarianship, Copenhagen, Denmark on 21-22 November 1995.

> **'Managers, whether in business or government or elsewhere, must take into account the influence of their external environment. They must have sufficient knowledge to be able to identify and evaluate forces that may affect an organization's operations'.**[1] *(Appleby, 1991)*

1. Introduction

- *How do we teach information management students about the business environment?*
- *How can we design courses on information sources and services provision that interest and motivate students?*

The structure of the second year undergraduate Business Information Sources module offered as part of the BA (Hons) Information Management and BA (Hons) Combined Studies degree courses at Queen Margaret College, Edinburgh, requires the students to gain an initial appreciation of two main themes: business (*per se*) and information sources. At the end of the one-semester module the students should have an understanding of the creation and use of business information sources and be able to examine critically approaches to the evaluation, and assess the management and value, of business information sources.

Two of the main problem areas of such a module include generating in students (1) an interest in the workings of business (and a means of motivating students to study what might be regarded – from the syllabus at least – as a 'dry' subject) and (2) an understanding of the wider environment in which these businesses operate. Only with an early consideration of these themes does a discussion of business information sources make sense. This can be quite a challenge given that the majority of students taking the module are teenagers who, at this stage of their academic careers, have followed no formal courses in business studies, nor have they experienced the business world in practice. Identifying appropriate textbooks is problematical since the academic readers are aimed at students whose specialism *is* business studies, and the coverage of Scottish business issues (operating under a legal system different from that of the rest of the UK) is often inadequately treated in the standard texts. This paper will discuss methods used as part of the BA (Hons) Information Management degree at Queen Margaret College to address some of these problems.

Other issues raised by this paper include accommodating the impact of yearly changes to subject content within the established structure of the syllabus (business information sources come and go, but the principles for their management are more permanent); the development of the actual module programme and assessment strategies.

2. Students' awareness of business and its operating environment

- *What kind of exercises can be developed for generating an interest in the workings of business and the wider context in which business operates?*

Two exercises have been developed to raise the students' awareness of business and its operating environment in support of lecture material and set reading. The first of these, introduced in the initial seminar, is a share investment game based on the workings of the London Stock Exchange. The students organize themselves into self-appointed fund management groups. They are 'given' £1,000 to spend on shares in the top 75 UK companies (by market capital) based on the close of trade figures of the previous week. The students report back seven days later with their shopping lists of shares and the details are entered into the spreadsheet shown in Figure 1. Each week at the beginning of the main class meeting an update on how the investments are faring is announced. The game ends at the close of the London Stock Exchange on an agreed date later in the semester. The results are publicized in the last session of the term, the winning team is congratulated on its achievement, and, depending on the generosity of the module co-ordinator, may also win a small prize. Since the glorious team last year invested heavily in Cadburys it was felt appropriate that they should be rewarded with Creme Eggs. Figure 2 shows the final outcome of the investments of the 1994/5 Business Information Sources teams.

The game is effective for a number of reasons. For a module that is assessed solely by examination it is important not to burden the students (or for them to perceive that they are being burdened) with additional unassessed course work. For this exercise, the

Company	Bought at	01-Mar	08-Mar	15-Mar	22-Mar	BKS	Hourly	CAL	Noisettes	GiG	BCG	Funman	DGS	BELL	Oranges
3i	358.0					10							45		
Abbey National	440.0												30		
Argyll	272.0					36							20		
BAA	460.0														
Bank of Scotland	209.0										120				
Barclays	612.0							15						23	
Bass	524.0												47		
BOC	726.0					13									
British Gas	310.5					32									
British Telecom	394.5										100				
Cadbury Schweppes	419.0					23	52		47						
Commercial Union	528.0													27	11
De La Rue	1039.0						10			20				13	23
General Accident	547.0													26	
Glaxo	662.0							23	31						
Granada	523.0													27	10
Guinness	435.0										50				15
Hanson	246.0						48			101				58	
HSBC	675.0							24							
ICI	748.0								36						17
Kingfisher	429.0								44						
Ladbrokes	177.0						50				77				
Lloyds	560.0											40			
Marks and Spencer	399.0							30	35						
National Power	478.0							17					42		
P & O	601.0						60							23	12
Powergen	509.0												21		
Prudential	305.0					32									2
Reckitt and Coleman	647.0					15						18			
Redland	448.0							41				22			
Royal Bank of Scotland	419.0													4	
Sainsbury	422.0														
Scottish and Newcastle	496.5					20		21				40			
Shell	726.5														28
Smith Kline Beecham	488.5														18
Southern Electric	747.0									41		30			
Thorn EMI	1049.0							10							
Tomkins	236.0									101					
Unilever	1179.0					8						20			
Vodafone	192.5						55								
Wellcome	1025.0					9									
Whitbread	429.0					18									
Wolseley	800.0														11
Portfolio value 01/03						£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Portfolio value 08/03						£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Portfolio value 15/03						£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Portfolio value 22/03						£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Original portfolio value						£982	£995	£1,000	£1,000	£1,001	£999	£999	£1,000	£999	£999

Figure 1. Shares

Team	**Final value**	**% change**
Noisettes	£1042	+4.2
CAL	£1031	+3.1
BKS	£1022	+2.2
BCG	£1003	+0.3
BELL	£992	-0.8
FunMan	£989	-1.1
DGS	£985	-1.5
Hourly movements	£984	-1.6
Oranges and Lemons	£961	-3.9
GiG	£909	-8.1

Figure 2

level of involvement is the students' choice. Some simply select their shares at random in Week 2, use their initials as the name for their fund and wait for the result. Others adopt a more enthusiastic approach thinking carefully about their initial purchases, devising a witty group name, tracking the share movements closely and reading the financial press commentaries on their companies. It has been the case that the students who fall into the former category convert to the latter as a degree of competitive fever spreads through the group. As a direct result of the game business news stories begin to interest the students, particularly when 'their' companies are under scrutiny. Wider issues take on a relevance: in 1994/5 British media discussion of 'fat cat' share option deals and profits of the privatized utilities suddenly had a context. The collapse of Baring's Bank, two weeks into Semester 2 teaching, could not have been timed more perfectly for the purposes of the module as the media turned its full attention on the financial markets.

The second exercise is as simple to administer and helps illustrate lecture material. The students are asked to bring a press cutting to the seminar that demonstrates the impact of an external factor on the operation of a company. Each student presents his or her analysis of the business story to the rest of the group. Together the whole group classifies the 'types' of external influence. Categories might include changes in consumer behaviour; impacts of new domestic or European legislation; incentive schemes; changes in the political climate; weather and changes in world markets. As well as providing the opportunity of learning about the importance of information on the operating environments of business, this exercise requires the students to consider newspapers as sources of business information. Rarely does a student fail to bring his or her own story to present to the class knowing that the tutor will supply 'spares' for those who prefer the challenge of thinking on their feet!

The Oxford Centre for Staff Development[2] states that: 'Research has identified students' approach to learning – whether they take a surface or deep approach – as the crucial factor determining the quality of learning outcomes. Those who take a deep approach understand more, produce better work.' These exercises, through their practical nature, aim to encourage 'deep' learning, which should produce long-term benefits in understanding.

3. Information sources – the 'dry' topic

- *How can students be motivated to participate fully in the learning process?*

As a result of the modularization of degree courses students may now view their university education as comprising a string of component blocks of classes, each ending with an assessment task. This attitude of compartmentalizing subjects can be detrimental to the aims of the modules undertaken. Lecturers write module descriptors with a focus on learning outcomes rather than the gain of a qualification. The priority of the strategic student is often the reverse. For any unpopular, compulsory module uninterested students gear engagement with the syllabus simply towards passing the assessment with the minimum effort. Their spare capacity is channelled into the favoured modules on offer during the semester. A glance at the Business Information Sources syllabus in Appendix 1 would not mark it out as one of the most exciting modules in a British university. It is the challenge of the co-ordinator to make it such.

Teaching methods which engage the emotions, as well as the intellect, raise levels of motivation. For this module the relevance of the subject content to future work opportunities is emphasized. The module guide issued at the beginning of the semester contains details of the syllabus, study schedule, reading and past examination papers. The inside of the front cover, and inner and outer back cover pages of the guide, are pasted up with business information related job advertisements. To kick off the discussion on business information services a larger number of adverts is analysed to identify business information management duties. Guest lecturers are asked to detail their careers and are warned that this is the primary focus in question sessions following most formal presentations from outside speakers. There can be no doubt in the students' minds that there is a market for business information skills, should they wish to enter it, and this encourages their commitment to the subject area.

The exercise devised for the students to explore company information sources also plays on the careers angle. As a group exercise students are asked to write a one-page company profile of a major British firm that would be of help to one of their final year colleagues preparing for a job interview. Additionally the group has to provide an annotated bibliography of the sources consulted in drawing up the profile.

More immediate general information skills needs can be met through this module, thus enhancing the motivation of the students to participate fully. This is the first module of a series that examines sources by subject area. The benefits of understanding bibliographic structures in the workplace are outlined as a reason for following up the information mapping exercise described in the e-mail message Appendix 2, and students also learn to apply this knowledge for literature searching while still studying.

To maintain motivation the content of the module needs to be presented as relevant. Whenever possible local examples are used to illustrate issues covered in the syllabus. For example, for the exercise dealing with the duties of a business information manager, care is taken to include in the selection of adverts jobs offered at graduate entry level located in Scotland. Informal discussions with students who took this module last year have revealed longer term appreciation of the relevance of the study. Students are now sufficiently interested to follow the business news and a number have passed on suggestions to improve the module next year based on their 'follow up' interests.

A visit to the Business Information Service at the National Library of Scotland is perceived as a 'trip' for entertainment, rather than a visit to enhance the learning process, thus providing an opportunity for enjoyment through study.

A highly motivated, energetic and enthusiastic lecturer with imagination and a sense of humour can serve as an antidote to the dryness of the topics covered. A variety of teaching methods – traditional lecture and seminar, videos, students' debate, practical evaluation of sources, visitors, group exercises, games ('Why do you think I've brought all these canned drinks into the classroom?' for a discussion on brands) – keeps the classroom animated.

4. Module design

- *What should be included in the twelve teaching weeks?*

It has been established that the relevance of what is taught should be made evident to the students to help motivate them to participate fully in the class. One aspect of relevance is currency, and this poses a particular problem in the area of business information. It is easy to illustrate the pace of change. For example, today we talk of Knight-Ridder Information, Ovid Technologies, Questel-ORBIT and LEXIS/NEXIS. Just two years ago we would have used the names Data-Star Dialog, InfoPro Technologies and MDC. To counter this problem industry contacts advise on annual modifications to module content, closer attention falls on the journal literature than one would expect at Level 2 of an undergraduate course and the visiting speakers are encouraged to report on recent, and projected, developments in business information. Emphasis is put on *types* of sources and services, rather than named sources and services. This fits the aim to 'provide a learning environment which will stimulate the intellectual curiosity of students and encourage them to attain their maximum potential, whilst, at the same time, creating the professionals to work in a rapidly changing environment'[3]. Some aspects of business information provision are only alluded to at this point of the course (for example electronic sources). Students who choose to may take up topics again when on placement in their third year, in later modules or for their final year dissertation.

Students do have to deal with some heavy factual content through the course of the module, particularly at the beginning. To cut down on the dangers of the over-use of lectures that leave the students dependent on the information provided to them as near dictation, a variety of methods is used to deliver factual material. Lecture outlines are sent to the students by e-mail prior to class meetings. Students annotate these in class and use them as outline notes for supplementary reading. Full handouts for material that can easily be digested are provided in lieu of lectures so that more time can be spent on exercises that develop the students' understanding and independent thought. Recent television documentary material prompts discussions (such as excerpts from BBC's *Panorama* and *The Money Programme*, as well as spoof sketches from *The Day Today*). Students are also encouraged to attend professional meetings, such as those organized by the Scottish branch of the Institute of Information Scientists.

Although the modular system does not officially provide for continuous assessment, regular feedback is offered throughout the semester on group exercises and a mid-semester test, focused on checking that students have grasped basic concepts, provides encouragement to study early for the examination in Week 14, and reduces exam anxiety. The exam itself consists of thirty multiple choice questions and five essay questions, of which two must be answered. The essay questions relate directly to the group exercises (See Appendix 3).

5. Student feedback

- *'Best module of IM so far. Relevant to the real world job-wise.'*
- *'I feel like I have learnt something.'*
- *'Some aspects are actually quite interesting to read up on which surprised me.'*

For the past two years students have been asked to evaluate the Business Information Sources module. Some generous comments have been made about its delivery, and there is overwhelming support for its content: it is new and interesting to the second years, has wide general applications and is found to be relevant. The structure of the module has been praised because pointers are given so that material from lectures in seminar exercises and discussions can be followed up, allowing students the option of widening their understanding of the issues involved.

The majority of students favour an examination as the assessment method, describing the preparation for this as 'appropriate', 'excellent', 'organized' and 'balanced'. In the event, there have been no unexpected failures at the assessment.

Suggestions for improving the module have included opposing views such as 'Please include European sources' and 'There is too much covered in the module'. Any other complaints have been related to timing of the seminars (late afternoons are unpopular) and the stock of the Library. It could be argued that any academic library would have difficulties providing for modules geared towards sources in a broad subject area.

6. Conclusions

Gates[4] discusses how critics of library education claim that 'there is too much emphasis on the acquisition of techniques and skills and not enough on broad education'. The delivery of the module described in this paper addresses this issue, equipping students with a knowledge that can be applied whenever they look at a quality newspaper, hear radio or watch television news, as well as training them in one aspect of information services provision. The methods outlined might be adopted for similar courses in other higher education institutions, where a subject context has to be set ahead of the main module content.

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4. GATES, Jean Key. *Introduction to librarianship*. 3rd ed. New York: Neal-Schuman, 1990.

APPENDIX 1

Business Information Sources – Syllabus

The details of the syllabus are extracted from the BA (Hons) Information Management Course Document (1993).

1. Module information

Department	CIS
Title	Business information sources
Level	2
Credit points	10
Co-ordinator	Hazel Hall (CIHALL)
Pre-requisites	Information in organizations
Co-requisites	None
Prohibited combinations	None
Assessment	One 2 hour examination

2. Learning approach

Lectures:	12 one hour lectures
Seminars:	12 one hour seminars
Independent study:	56 hours

3. Rationale

Information professionals working in the business community require an understanding of the sources and use of business information to help meet the business aims of the company. This module links with *Information Retrieval* as well as with modules in the management strand.

4. Aims

The module aims to:

1. develop in students an understanding of the creation and use of business information sources
2. examine critically approaches to the evaluation of business information sources
3. assess the management and value of business information sources.

5. Content

1. Information sources and need in the business environment
2. Selection and acquisition of business information sources
3. The effective dissemination of business information.

6. Main texts

KAYE,D. (1991):*Information and Business*. Bingley.
DOSSET, P. ed (1992): *Handbook of special librarianship and information work*. Aslib.

APPENDIX 2

From: CIS::CIHALL "Hazel Hall" 2-MAR-1995 17:13
To: @M:\bis
CC:
Subj: **Mapping information sources exercise**

This is to clarify what I have asked you to do next for BIS.

I would like you to familiarize yourselves with the literature of a specific industry sector. This will help demonstrate to you the difference between different *types* of information sources and the importance of bibliographic control.

There are instances in business information work where you have to become familiar with the literature very quickly in order to get a piece of work done. For example, a friend of mine got a new job in 1988 and the first thing she had to do was set up a new business information service for an accountancy firm. She was given a room and a budget, then had to set about buying sources and subscribing to services related to accountancy and finance. Information consultants, who work on independent projects in different sectors, may find that they are assigned to one sector one week and another the next and are expected to be conversant with the sources of both.

The output I expect you to prepare from this exercise is a bibliography and an information source map. Each will contain the same information. The bibliography will be a straight listing as you have done in the past for assignments. (If you would like to annotate your bibliography please do so. The evaluation of sources is on the syllabus!) The map could follow the layout of the blue handout that I gave you in the seminar this week, or you could invent your own design. The main thing that the map needs to demonstrate is that the sources are examples of *types* of source and that there is a bibliographic structure for the subject area.

You do not necessarily have to look at the actual sources listed in your bibliography and map, although you might like to out of curiosity (if they are accessible of course!) If you do decide to have a hunt for them bear in mind that the QMC library is limited. Those of you who have chosen retail, fashion, textiles and tourism will have more luck here than those who have chosen brewing and finance. However, the brewing and finance students (if they want to) could seek their material at Heriot-Watt and Napier respectively. These two institutions offer degrees in these subject areas, so should have collections in their libraries to support them.

What you *will* need to look at is the tertiary sources. I showed you Walford in the seminar. This is where you should start. There are also other tertiary sources in the library such as Sheehy, which you may like to consult. Remember also that library catalogues are good bibliographic tools and that you can access ones outside College over Janet if you want to.

At a minimum you should aim to include a sample reference to each of the following types of source for your area:

1. Online secondary source
2. Print secondary source
3. Bibliography
4. Current awareness service
5. Encyclopaedia
6. Handbook, manual or dictionary
7. Yearbook or directory
8. Report
9. British Standard
10. Learned journal (ie a refereed journal)
11. Newsletter journal

Let me know if you have any questions about this.

Good luck!

Hazel

APPENDIX 3

Business Information Sources – Examination Essays May 1995

Part B of the examination in Business Information Sources requires the students to answer two out of five essay questions. The preparation for answering the questions relies on several learning strategies.

1. "The tidy and structured world in which information professionals operated has been exploded." (Prytherch, 1994)

   With reference to an industry sector of your choice illustrate how a knowledge of bibliographic control enables a business information manager to make the most of the information sources at his/her disposal.

   Preparation principally through:
   Lecturer's introduction in mapping information sources in an industry sector in Week 4 (textile industry).

   Student's group submission of industry source maps for an industry of their choice in Week 6.

2. "It also happens frequently, that we, as providers of information, don't even know what the business needs the information for. They just asked us for it, so we provide it. How much more effective we would be if we always knew what it was to be used for and how." (Atkinson, 1994)

   What are the business information needs of Scottish commerce and industry and how are these currently being met?

   Preparation principally through:
   Set reading in Weeks 7 and 8 (articles from *Business Information Review* on Scottish business information provision).

   Visit to the Scottish business information service at the National Library of Scotland in Week 7.

   Visiting speaker from West Lothian Business Shop in Week 8.

3. "Company information is by far the largest part of total business information activity, representing, for example, about half of all enquiries received in business information libraries." (Kaye, 1991)

a) Who are the principal users of company information and what are their needs for company information? (10 marks)

b) With reference to a company of your choice describe the information sources a job seeker could use for research in preparation for interview. (15 marks)

   Preparation principally through:
   Lecture notes in Week 5 on company information.
   Set reading in Week 5 on company information.

Company profile exercise in Week 9. Working in small groups students selected a Times 100 UK company and using the sources at their disposal drew up a profile that could be used by a final year student in preparation for a job interview with the firm.

4. a) What arguments can a public library use to justify the introduction of charges for business information services? (15 marks)
   b) Outline the major pricing strategies such a service could use. (10 marks)

Preparation principally through:
Seminar debate in Week 8. Students were divided into the pro and anti charging lobbies.
Set reading in Week 8 on charging and pricing policies.

5. Describe the circumstances in which is it in the interest of a commercial information unit to use outside agencies in order to meet internal user information needs.

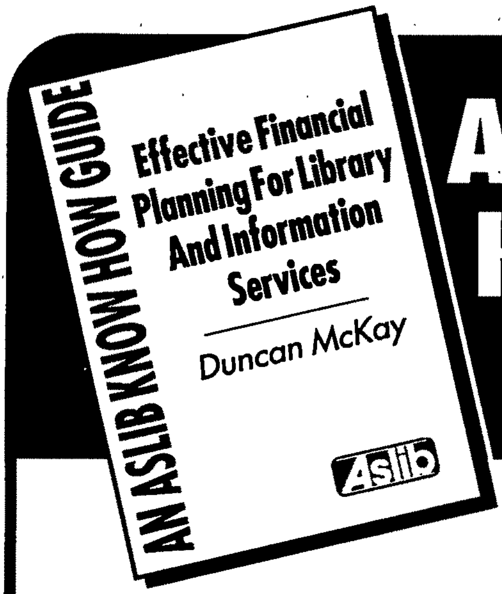
Preparation principally through:
Seminar discussion in Week 8 on the topic.

APPENDIX 4

Business Information Sources 1994/5 – Module Guide – Study Schedule

Week	w/b	Lecture	Reading to supplement lecture notes	Seminar
1	06/02/95	Introduction; companies and company finance	Appleby 48-64 (5th ed) Brett 32-47 Haythornthwaite 1-14, 107-110, 118-121 Kaye xi-xiii, 1-7, 25-63	No seminar meeting
2	13/02/95	External business environment	Appleby 45-58, 56-59 (5th ed) Kaye 8-23, 189-198	Financial pages; setting up of shares exercise; agency abbreviations quiz
3	20/02/95	Information: character, purpose and value	Martin and Powell 10-17 Zorkoczy 10-13	External business environment *Students to supply prepared newspaper articles for discussion in the seminar*
4	27/02/95	Business information needs	Hall Hills 81-89 Wilson	*Students to bring results of agency abbreviations quiz* Mapping information sources in industry sectors; selection of industry sectors for presentations in week 6
5	06/03/95	Information source by function	*Company information*: Kaye 64-102, Haythornthwaite 107-126 *Marketing Information*: Kaye 145-188, Haythornthwaite 127-161	Role of the business information manager *Reading:* Dossett 3-9, Wyllie
6	13/03/95	Information source by form	Gash 6-19 *Brands, trademarks, prices, trade literature*: Kaye 131-144 *Newspapers*: Haythornthwaite 31-47 *Official publications*: Haythornthwaite 49-71 *Patents*: Kaye 103-120, Haythornthwaite 187-191, Oppenheim 219-256 *Standards and regulations*: Kaye 121-130, Haythornthwaite 191-196, Oppenheim 119-133	Information source maps; selection of companies for profiles to be submitted at the end of term *Presentations of industry source maps* Due to Hazel's commitments with the Institute of Information Scientists on Tuesday 14 and Wednesday 15 March in London the seminars will take place at a different time this week. Times and locations are to be arranged.
7	20/03/95	Lecture at National Library of Scotland	Reid and Webster 1, 2 and 3	Visits to the business information service of the National Library of Scotland: Group A Thursday 10.30, Group B Friday 10.30
8	27/03/95	Visiting speaker – Susan Bedford-Visser, West Lothian Business Shop	Reid and Webster 1, 2 and 3	Management issues in business information services provision; results of shares exercise from week 2 *Reading: Inform*
9	03/04/95	Independent work on company profiles to be handed in on 07/04/95		*Independent work on company profiles to be handed in on 07/04/95*
10	24/04/95	Mid-semester test		Company profile feedback; evaluation of sources – CAS
11	01/05/95	Feedback on mid-semester test		Essay writing for the exam
12	08/05/95	Exam preparation		Individual revision tutorials
13	15/05/95	Course work submission week		Course work submission week
14	22/05/95	Exams		Exams
15	29/05/95	Exams		Exams

Easter vacation weeks beginning 10 and 17 April
Books listed will be kept in closed reserve for the duration of the module.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Implementing TQM for library services: the issues

Jennifer Rowley
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What is TQM?

TQM is defined as managing the entire organization so that it excels in all dimensions of products and services which are important to the customers[1]. Excellence in a TQM organization is defined by customer requirements and needs.

Experience over the last ten years of implementation indicates that one single approach is not superior to another[2]. As TQM has become increasingly important, the philosophy has shifted from a purely statistical view of process control[3] towards a systematic view[4] with strong internal and external customer orientation. Interest in service quality has increased substantially in recent years (e.g. Lewis[5]) although initially the fundamental characteristics of services as summarized in Table 1 have posed a number of issues concerning the management of the quality of services, not the least of which is how to measure service quality. There is a continuing debate concerning the measurement of service quality, which is summarized by Dotchin and Oakland[6, 7]) and Rowley[8]. Despite the absence of any clear generic indicators of service quality, many service sector organizations have sought to address the issue of quality and to make use of approaches such as TQM with a view to embedding a quality culture in their organizations.

Library and information service managers have long recognized the need for customer orientation that is inherent in the TQM philosophy and some have sought to implement TQM or have been involved with TQM initiatives within organizations that have been involved with TQM. In addition, customer care and other customer focused programmes have been used in training those library staff who are in direct contact with the public.

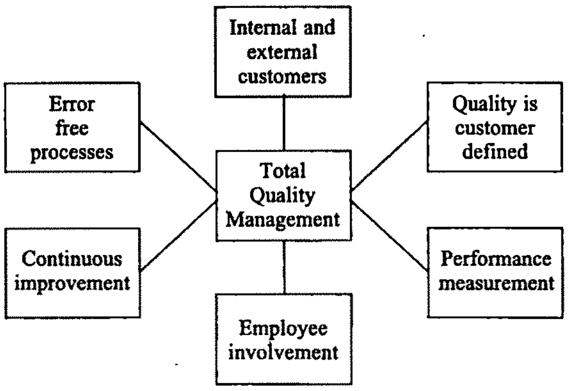
Main elements of TQM

The main elements of TQM are depicted in Figure 1. More specifically these are:

intangibility	services cannot be evaluated in advance of use
perishability	stocks of the service element of the service package cannot be held and services need to deal with demand and capacity directly
simultaneity	the customer must be present before the service can take place
heterogeneity	there is inherent variability in the service offered

Table 1. The fundamental characteristics of services

Figure 1. The main elements of TQM



1. *Quality is customer defined* – Quality is defined in terms of customers' perceptions, or in a more complex model that is widely debated in the service quality literature as the gap between expectations and perceptions. Such customer focus requires not only an attention to internal processes, but also an awareness of the external marketplace. Only a match between the requirements of the marketplace and the internal processes and operations will lead to a quality service.
2. *Internal and external customers* – The only way to ensure that the organization has a focus on customers that impacts equally on all departments and teams, including those not in direct contact with the external customer, is to encourage each employee to identify those to whom they provide a service and to view those people as their internal customers. In this way the customer orientation can permeate the organization.
3. *Employee involvement* – Employee involvement follows automatically from the need for all employees to consider their internal customers. Employee involvement means that each individual must take the initiative and not rely upon someone else. In order for this to be achieved the organization needs a culture which encourages this behaviour. Everyone must understand that they contribute equally and can only succeed through co-operation and support.
4. *Error free processes* – The focus of TQM is on prevention to eliminate waste, reduce costs and achieve error-free processes. The traditional approach to TQM which developed in a manufacturing environment was a strong focus on process quality control. Service managers need to interpret

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this focus in a way that is appropriate for services with inherent variability and the less controllable element of the customer.

5. *Performance measurement* – Performance measurement needs to be based upon timely measures of, and feedback on performance through superior quality information systems.
6. *Continuous improvement* – Continuous improvement must be seen as the responsibility of everyone in the organization. To develop this a focus on training, education, communication, recognition of achievements and team work is often seen as appropriate.

Implementing TQM

Whilst there is some general agreement as to the concepts and philosophy of TQM, there is much less agreement about the route to be taken. Although much has been written on the subject of implementation of TQM, there are many factors that might influence the most appropriate approach to TQM in a specific context. Rather than attempt to offer a model for the introduction of TQM in library services, it is perhaps more fruitful to explore some of the issues that need to be addressed on the road to a successful implementation of TQM. These include:

Defining quality – We have already noted some of the difficulties in defining service quality. In addition, global definitions are not particularly helpful – quality must be articulated in terms to which individuals can relate. Teams, departments and individuals need to be assisted in identifying definitions and measures that are appropriate in their contexts. In a service environment, it is likely that a number of these will relate to speed, timeliness and accuracy and completeness. So, for example, in a library context typical measures might relate to the speed of response to requests for items delivered via inter-library loans, or the appropriateness or completeness of a search outcome. Some of these measures will be more difficult to express numerically than others.

Clarifying customers – Who are the external and internal customers? Are there any ways in which the customers can be segmented either on the basis of the service that they require, or their attitudes to effective service delivery? Any debate within service organizations will probably bring out the differing foci of different groups. Although there has been an increasing move towards involving the majority of staff in direct customer service it remains important for those involved in processing, such as cataloguing, as well as managers to understand who the customers are, and, in general, to work with a profile which encourages wide awareness of customer needs.

Measuring quality – There are a number of different approaches to measuring quality:

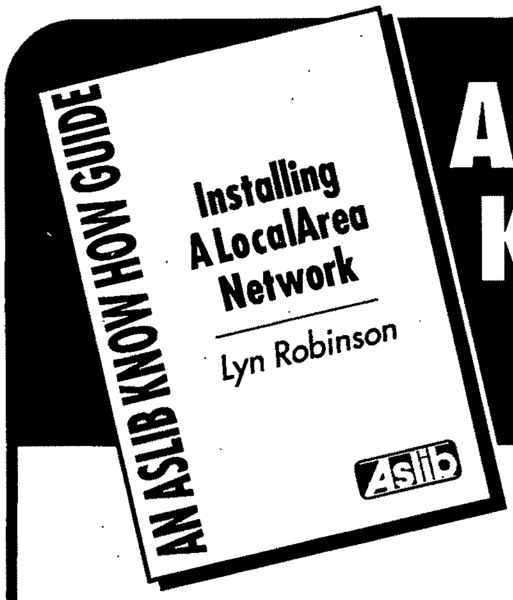
- Complaints – The level of complaints is one indicator of quality, and provides some directions for potential improvements. However, absence of dissatisfaction is not necessarily proof of customer satisfaction and other methods are also appropriate.
- Customer surveys – These ask the customers for their assessment of the services offered.
- Benchmarking – comparing the organization with its competitors.
- Employee surveys and suggestions boxes can provide valuable information on the interfaces between teams and departments.

Measures of current quality provide a focus for the continuous improvement programme.

Establishing quality as a strategic issue – Quality as a strategic issue implies acceptance of the importance of customer requirements throughout the organization; the identification of continuous improvement as a key organizational objective and the introduction of meaningful performance indicators. None of this will take place without top management commitment which is vital for the credibility, continuity and longevity of the TQM initiative[9].

Organizational structure –Organizational structures can be divided into two main categories: mechanistic and organic. Mechanistic structures include functional, bureaucratic structures which tend to be relatively inflexible, with clearly defined levels of authority, and decision making that is governed by policies, procedures and rules. Organic structures, on the other hand, employ decentralized decision making whereby both accountability and responsibility are transferred to as low a level in the organization as effectively possible. Structures such as project teams, taskforces and the matrix approach are common. Organic structures are much more likely to foster the central elements of TQM in respect of responsiveness to customer requirements, participative and creative problem solving and team ethos. Both the structure within the library and the structure of a parent organization may have an impact. Various different management structures have been explored in different libraries. However, in many contexts, the team is often a central element; these structures are particularly ripe for the adoption of a TQM based approach.

Organizational culture – The term culture is used in relation to corporate identity or personality. Culture is associated with the philosophy and values which create a common understanding amongst organizational members concerning the organization's mission and how its members should behave. Robbins[10] argues that effectiveness requires that an organization's culture, strategy, environment and technology be aligned. Clearly if TQM is to be successful it requires a culture that actively promotes customer requirements, continuous improvement, creative problem solving and a team ethos. Organizations



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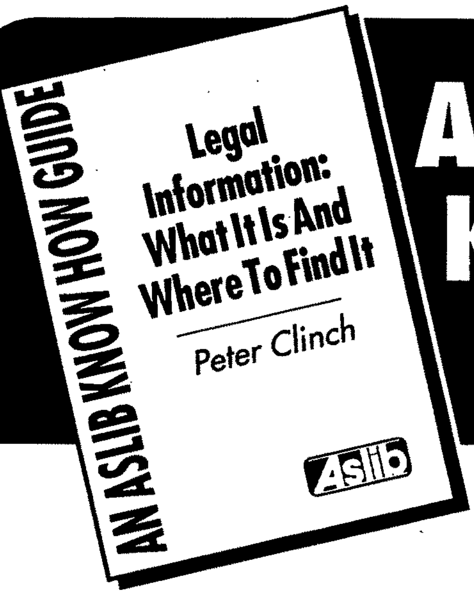

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considering the implementation of TQM need to identify and take into account their organizational cultures. Although many of these themes will be recognized by librarians, the culture varies depending on the culture of the parent institution. For example, in public libraries, the parent organization's culture is public service oriented; in a business context, the culture will be commercially driven, and in an academic library, education and learning will be valued.

Human resource management – TQM is a very people centred approach to management. A central concern is employee commitment. Successful TQM depends upon employee commitment. DeCotiis and Summers[11] have identified a number of processes which impact upon commitment:

- leader behaviour in relation to subordinates
- social involvement (with other members)
- the challenge, responsibility and influence offered by the job
- participation in decision making, and
- open communications.

Management style and leadership always needs to be adapted to the environment. It is important to consider different approaches.

Conclusion

This article has explored some of the issues associated with the implementation of TQM in a library and information service environment. All services present particular problems in relation to quality management because of their inherent characteristics: intangibility, perishability, simultaneity and heterogeneity. On the other hand there is an increasing focus on the importance of the quality of the service experience.

In implementing TQM in a library and information service environment it is necessary to establish some basic definitions by answering questions such as 'what is quality?' 'who are our customers?' 'how can quality be measured?'. The establishment of quality as a strategic issue is central to successful implementation and top management commitment will be necessary, both for its own sake, and also in relation to appropriate modifications to organizational structure and culture. Full employee commitment will only be achieved by appropriate human resource management structures. The implementation of TQM in the library and information service environment poses interesting challenges on the road to potentially significant benefits.

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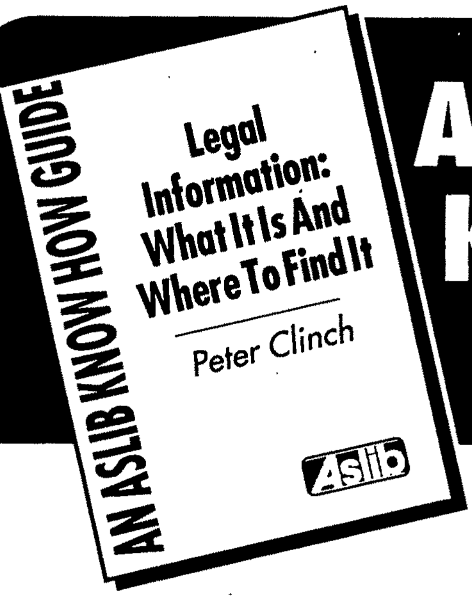

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Managing a library automation project

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Abstract

The paper begins with a brief history of library automation and the implementation of DOBIS/LIBIS at the King Fahd University of Petroleum and Minerals Library. It also discusses the management aspects of the automation project including the composition of the project management teams, the roles of the Project Manager and the Library Systems Analyst and the relationship between the Library and the Data Processing Center as two major partners of the project. The paper also highlights the limitation of the Systems Office in the absence of full-time staff and suggests that library automation must be managed just as other activities are managed.

Introduction

Saudi Arabia is the world's largest oil producing country and 60% of its revenues come from oil export. Petroleum and minerals industries provide the largest industrial base for the country. To provide skilled manpower to the industrial sector, the College of Petroleum and Minerals was established in 1963 in Dhahran, the city which is the headquarters of the renowned oil company, Saudi Aramco. Unlike other academic institutions, the college was attached to the Ministry of Petroleum and Minerals rather than to the Ministry of Higher Education. The college was founded on western standards of education, with English as the language of instruction. Most of the academic and technical staff were recruited from the United States and Europe. Physical facilities including the library, computer centre and laboratories were developed in consultation with the American Consortium of Universities to support the academic programmes of the college. This set up continued even after the college was upgraded to a university in 1975 and was attached to the Ministry of Higher Education. The university was renamed King Fahd University of Petroleum and Minerals (KFUPM) in 1986.

As graduate level programmes were introduced, the library was given additional funds to improve collections and services in support of academic and research programmes. A decision was also made to use computers in certain operations such as online searching of DIALOG and ORBIT databases and the production of a serials list. In 1976, the Head of Acquisitions was sent to Germany to do a preliminary investigation of the DOBIS/LIBIS system. Upon his return, he gave a favourable report. However, no further progress was made in this area in the following years due to a change in the administration of the library and the automation file was put on hold until 1979 when another change came in the library administration. The newly appointed Dean of Library Affairs set two major goals: (1) to improve the organization and planning of library services, and (2) to maximize the utilization of library resources. Several projects were identified as top priorities, including library automation.[1] The first step in the direction of library automation was a pre-feasibility study by the Data Processing Center (DPC) in March 1979. The study reported that processing of library materials involved slow, labour-intensive procedures involving duplication of effort in the various departments of the UPM Library and concluded that the need for improved library operations, management of collection and user services requires library automation.[2]

Task Force on Library Automation

In accordance with the recommendation of the pre-feasibility study, a Task Force on Library Automation (TFLA) was created in March 1979 to prepare an automation plan and project specifications for automating library operations. The composition of the TFLA was a mixture of representatives from the Library and DPC. This marked the beginning of the library automation project.[3]

The TFLA began to look for a library system which would have the following features: integration, MARC compatibility, multiple language capability, network capability and IBM compatibility. Of the systems investigated, DOBIS/LIBIS was found to be the most suitable. TFLA members visited a few DOBIS/LIBIS installations in Canada and Belgium, to get first hand information about the system in operation. Subsequently, the University contracted for the services of a consultant, who also recommended DOBIS/LIBIS as the most suitable for the UPM Library for the following reasons: it provides computerization of the library functions of acquisitions, cataloguing, circulation, and OPAC; is more or less compatible with several national bibliographic communication formats; has been installed at institutions in North America, Europe and South Africa; can run on the IBM mainframe available at UPM, and has the local vendor support. Finally, a licensing agreement was signed with IBM in June 1980.

DOBIS/LIBIS

DOBIS and LIBIS were developed as two separate groups of modules. DOBIS (Dortmunder Bibliothekssystem), developed at the University of Dortmund in Dortmund, Germany, handles online system programs for controlling terminals and the database; application programs for online searching and cataloguing functions; and batch utility programs for maintaining the database. On the other hand, LIBIS (Leuvens Integraal Bibliotheek Systeem), developed at the Katholieke Universiteit Leuven in Belgium handles Circulation and Acquisitions modules and batch outputs. The two programs were later combined into a single product called DOBIS/LIBIS which was marketed until September 1992 by IBM.

DOBIS/LIBIS offers a choice of two operating systems – MVS and VSE. Each system is also available in more than one version. For example, the DOBIS/LIBIS MVS system is available in macro-level and command-level versions. DOBIS/LIBIS programs are written in PL/1 and Assembler languages. The source code is supplied to users to allow them to make modifications and enhancements of various programs to improve the functioning of the system. The availability of the source code was important as DOBIS/LIBIS was not intended to be used as delivered. As a matter of fact there are several areas in which a given library may need to adapt the system to its own local environment. Some libraries have used this source code to develop the system independently of IBM—for example, CAN-DOBIS, installed by the National Library of Canada.[4] The KFUPM Library itself has modified and enhanced about 50% of the system and application programs, maps and tables.[5]

The lack of vendor support from IBM for maintenance and development of the system forced user libraries to be independent in resolving problems and doing modifications and enhancements of the system on their own. Due to lack of communication among DOBIS/LIBIS users, a number of problem solutions and modifications and enhancements have been duplicated. For example, at least three users, including KFUPM, have developed interface programs to convert records from the USMARC format to the DOBIS MARC (DMARC) format.

The vendors of DOBIS/LIBIS, IBM and its successor Extended Library Access Solutions (ELiAS) since 1992, have issued new versions and releases of DOBIS/LIBIS incorporating modifications and enhancements of some user libraries and some of their own. Those user modifications which have not been incorporated into DOBIS/LIBIS have created a big problem for users who would like to migrate to the new version or release of DOBIS/LIBIS. It requires a high-level of expertize to take local modifications to the new version/release.

Library Automation Project

Following the installation of DOBIS/LIBIS, a three-phase implementation plan was prepared.

Phase-1 Operation of the Cataloguing and Searching modules and conversion of existing records to machine-readable form.

Phase-2 Operation of the Circulation module and interfacing with Student Records and Personnel Payroll systems.

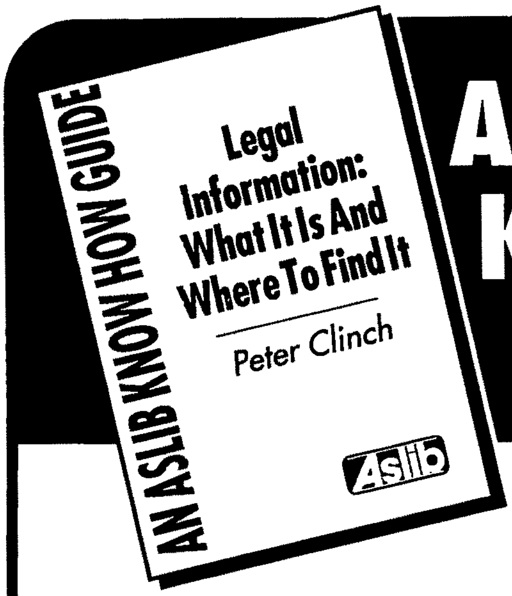
Phase-3 Operation of the Acquisitions module and interfacing DOBIS/LIBIS with the Financial Accounting System.

The project was expected to be completed in two years. However, several factors contributed to the extension of the project beyond two years:

1. New releases of DOBIS/LIBIS were issued which required testing, retesting and migration.
2. The periodicals module was issued for the first time with DOBIS/LIBIS version 1.3 in 1983. The initial implementation plan which did not have provision for implementing it had to be revised to accommodate the new module.
3. A number of major enhancements and modifications of the new releases were requested by the Library before and after implementing them into the production system.
4. The kind of local support expected from the vendor was not available. As a result, many things had to be done locally including some problem fixes.
5. Cataloguing, Catalogue search and OPAC modules were Arabized locally to support inputting and retrieving Arabic data in Arabic script.

The task of the TFLA was completed with the installation of DOBIS/LIBIS. However, to oversee the implementation and development of the system and to ensure that the progress of the project did not deviate from schedule, two project management teams were formed: (1) top management team, and (2) project management team. The functions of each team are discussed below:

1. *Top management team:* The team consisted of the Dean of Library Affairs and the Library Systems Analyst from the Library side and the Director of DPC and the Project Manager from the DPC side. The team met once a month, alternately in the Library and the DPC, to review the overall progress of the project, approve development programmes and discuss administrative issues related to software, hardware, supplies, etc. The successful implementation of DOBIS/LIBIS within the stipulated time and the subsequent progress of the project are due to the effective role played by the top management team. The two key members of the team, the Dean of Library Affairs and the Director of DPC report to the same Vice Rector and together they have been able to muster necessary support for the project from the university administration. The two have also maintained an excellent relationship between the Library and the



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DPC which has contributed to the smooth running of the project. While it is not unusual for computer centres and libraries in the western world to maintain partnership through formal service agreements for operating the integrated library system,[6] the two departments at KFUPM have fostered this partnership without an agreement which shows their commitment to a common goal of providing electronic information to the academic community.

2. *Project management team:* Unlike the administrative and supervisory roles of the top management team, the function of the project management team is to do the real work of the project including testing, implementing, modifying and enhancing the programs and problem solving. The team is headed by the Project Manager and consists of application programmers and system programmers from the DPC and heads of some Library departments. The first Project Manager was appointed from the Library to act as a facilitator and coordinator. His responsibilities included analysis of library operations, requirements, specification, overall planning and library automation procedures during the implementation phase. The automation project received a setback when the manager left KFUPM and a new manager from the DPC took over the project. This was a turning point in the project history as the Library lost the leadership role in the project and the Data Processing Center took control, a situation which still continues. This does not mean that the change of leadership in any way reduced the role of the Library in the project. However, it certainly made it difficult for the library to get certain things like system modifications and enhancements done their way because the Manager did not have a library background and it was difficult for him to perceive things from the library's point of view.

During the three phases of implementation, the automation project team met at least once a week to review the following:

1. a progress report of the previous week and an overview of outstanding and ongoing tasks presented by the Project Manager;
2. problems encountered by the Library in various DOBIS/LIBIS functions; the Library's request for modifications and enhancements of the system and for additional hardware; and a summary of problems related to hardware and scheduling of the system, etc. reported by the Library Systems Analyst;
3. a detailed explanation of functional problems with examples and demonstrations, and justifications for requests for modifications and enhancements given by the heads of Library departments;
4. reports from the programmers on the progress of work on the Library's requests for modifications and enhancements and/or on the fixing of problems reported by the Library;
5. status reports on printing various library batch reports and problems associated with them presented by the relevant programmer.

In these meetings representatives of the Systems & Operations Group of the DPC were also invited to provide feedback to the project team from the hardware side and to take note of the problems reported by the Library.

Much of the progress achieved in the library automation project was due to the active participation of members of the group and the effective leadership provided by the manager. The minutes of each meeting were recorded and distributed to each member and also to the higher authorities of the Library and the DPC before the next meeting. These minutes would help the members by reminding them of their responsibilities in the project during each successive week and beyond. Following the successful implementation of the project and as the system became more stable, the frequency of the project meeting was changed from weekly to monthly.

While the success of the automation project at KFUPM has been achieved due to the excellent team work of a number of people from the Library and the DPC, the contributions of the Project Manager and the Library Systems Analyst have been very significant. They formed the main communication channel between the Library and the DPC. It is therefore, appropriate to discuss in detail the roles of these two key people.

Project Manager

Since the beginning of the automation project in 1981, three different people have headed the project at different times, the first from 1981 to 1991. During his time, DOBIS/LIBIS was first installed in 1981, the three phases of implementation were accomplished, Cataloguing, Catalogue search and OPAC modules were Arabized and implemented, and above all four releases of DOBIS/LIBIS were installed, modified and enhanced to meet local requirements.

The distribution of jobs among members of the DPC group responsible for library automation was such that two people including the Project Manager were responsible for handling online programs and the other two for handling batch programs. In 1986, one of the programmers responsible for online programs left KFUPM. As a result, the Project Manager had to take over the entire online work. This arrangement later created a serious problem for the project when the Project Manager himself decided to leave KFUPM in 1991.

No back-up was available and to overcome the problems resulting from the departure of the Project Manager, two important decisions were made: (1) the system was frozen for six months for any modification and enhancement. It was felt that the system would run smoothly if nobody interfered with the programs. During this time someone would be able to develop some expertize in the online work and would perhaps be able to handle library requests for modifications and enhancements. (2) The recently departed Project Manager was requested to make at least two visits a year to fix problems in the online system and to do some modifications and enhancements requested by the library. In order to fill the vacuum resulting from the departure of the Project Manager, the Director of DPC himself took charge of the project.

In the summer of 1993, a new team was installed under a full-time manager with the primary task of maintaining the current system. The project manager having come from the Academic Computer Services department of the DPC needed some time to prepare a team capable of developing the system. After the learning period, he is currently supervising an implementation plan of DOBIS/LIBIS version 3.0. Once the plan is completed, the project will be back on its track.

Library automation activities have expanded so much during the last fourteen years that a repeat of the situation of 1991 (when the Project Manager left KFUPM and there was no suitable person available to take over the online work), might prove even more disastrous. The top management team is therefore making every effort to ensure that back-up programmers are prepared for both online and batch operations.

Library Systems Analyst

Following the departure of the first Project Manager, who belonged to the Library, and the subsequent appointment of a new manager from the DPC, the position of the Library Systems Analyst was created in the Library with the following responsibilities:

1. to act as liaison and single point of contact with the DPC on all matters related to automation;
2. to coordinate with library departments in testing and implementing new DOBIS/LIBIS versions and releases;
3. to provide training to library staff as well as users on the use of various DOBIS/LIBIS functions and to prepare necessary documentation;
4. to troubleshoot and resolve hardware and software problems with or without the help of the DPC;
5. to perform regular maintenance of DOBIS/LIBIS files.

The Library Systems Analyst was not expected to have access to the source code to make changes in the programs. Even the running of batch jobs for printing various library reports, including management information reports, was made the responsibility of the DPC. Thus limiting the role of the Library Systems Analyst in the automation project made the Library heavily dependent on the DPC for everything from small to big. The later attempts of the DPC to hand over the responsibility of some batch jobs to the Library did not work out because of the fear that the DPC might not be able to figure out the source of a problem if such responsibility were shared by two departments.

Limiting the role of the Library Systems Analyst also created some other problems. For example, although a Systems Office was created in the Library, for the most part it was headed by a person who was either transferred from another Library department or was assigned the Systems Office as an added responsibility. (The author has been running the Systems Office as an extra responsibility for the last six years.) The shortage of staff never allowed the present or past Systems Analysts to become 'more involved with the new areas of CD-ROMs, LANs, Internet, and microcomputer workstations'.[7] All these activities are handled outside the Systems Office and by people from other Library departments. The Systems Office is primarily concerned with the affairs of DOBIS/LIBIS only. Working with the DPC to implement the new versions/releases of DOBIS/LIBIS, keeping the current system running, performing an initial set of diagnostic steps that determine the nature of the problem, and maintaining a good quality database as part time responsibilities were possible only due to long experience, specialized skills, and motivation of the present Systems Analyst. It might be difficult for another person to administer the Systems Office on a part-time basis. It is, therefore, very important to hire a good Systems Librarian and a couple of supporting staff to manage not only library automation activities but also PCs, CD-ROMs, LAN, Internet, etc. Ellen Hoffmann has rightly described library automation as a process, not a project, and, it must be managed just as other resources and activities are managed.[8]

In the past, a number of attempts were made to hire a Systems Librarian through advertisements in international journals and through personal contacts with several individuals, but without any success. Saudi Arabia as well as other Arabian Gulf States being far away from major centres of computerization seems to be one of the major reasons for qualified people not seeking library systems jobs in this part of the world. They probably also feel that a high level of expertize is difficult to maintain in these countries simply because of their remoteness from where major developments take place.[9] According to Susan Baerg Epstein, 'the automated system may be, and most likely is, the most expensive and visible thing you will ever put into the library. The costs of both procuring and maintaining the automated system are significant. An event of this magnitude with a tremendous impact on the library's operation requires that the best possible person be put in charge, even if the library really doesn't want to spend the money.'[10]

Conclusion

The management of library automation projects through partnerships between computer processing departments and libraries is not uncommon, but it does pose problems. The Library becomes dependant on a team it cannot manage the composition of, and if one team disintegrates it takes a long time to create another competent at the desired level. Ideally libraries should have a full time systems person, with library automation being treated as a process, not a project.

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Discussion groups on the Internet as sources of information: the case of social work

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Abstract
Information technology is a facilitator in knowledge diffusion by enabling individuals to communicate directly in personal exchange. This includes interactive communications through newsgroups and discussion groups. Two discussion groups were analysed, the Social Work Discussion Group SOCWORK, and ABUSE-L, a professional forum for child abuse issues. Three types of communication were identified: information transfer, requests for information and discussion of issues. The discussion of issues was the main type of communication in both discussion groups, followed by the request for information and then information transfer. Communications in the discussion groups were dominated by a small number of people. Policy issues were the main topic of discussion in both groups. The control of information technology by academics appears to limit the participation of social work practitioners in determining the agenda of the discussion group or the contents of the communications. Social worker practitioners have not increased their access to information even though the technology to make it accessible exists.

Information technology has a dual function in knowledge management. First, information technology is employed to establish databases where empirical information can be stored and distributed. There are those[1, 2] who claim that social work practitioners appear not to appreciate the scholarly activity which is produced by academia, and stored in these databases. Empirically based knowledge has not yet become part of the social worker's way of knowing. The literature reports that relatively few practitioners read research oriented journals, make use of research findings or even rate them as helpful in their work[3-9]. Goldstein[10] notes a number of studies in which it was found that there is little connection between theoretical knowing and practical doing. Carew[11] defines the schism by asserting that knowledge developed through the scientific method tends to undermine the knowledge that social workers already appear to possess, their wealth of experience and their skills in interacting with people. The split is between those who 'know', the academicians, and those who 'do', the practitioners[12]. Knowledge development in social work focuses more on craft knowledge or the type of knowledge that is required for expert action. Traditionally it has been much less concerned with the development of abstract theoretical knowledge[13, p.32]. Social workers like other practitioners obtain information from their practising colleagues[14]. This finding is similar to that of a British Library report[15] which noted that social workers rely heavily on informal and often limited networks of colleagues as a means of keeping up to date.

Markus[16] describes social work knowledge and knowledge use from the standpoint of the social work practitioner. Describing the prevailing attitudes of the social worker towards the issue of social work knowledge, Markus claims that real expert practical knowledge resides in the minds of gifted practitioners.

In an exploratory investigation of knowledge use in actual practice by social workers, Rosen[17] found an almost total lack of use of research-based knowledge. Instead he found that social workers used value-based normative assertions as the rationale in decision making. Value-based assertions, Rosen tells us, seem to be similar to practice knowledge that comes about through the process of the social worker interacting with a client. Thus information technology in its role as a generator of literature databases is of limited value to the social worker. This brings us to the second function of information technology in information management. Information technology is also a facilitator in knowledge diffusion by enabling individuals to communicate directly in personal exchange. The computer can be a milieu for informal communications. This includes, for example, interactive communications through newsgroups and discussion groups.

Social work's humanistic, socially sensitive, participatory, interactive value system makes social work receptive to interactive communications. Interactive communications over the Internet support the method of knowledge attainment of the social worker and the type of information used in practicing the profession. Goldstein[18], a leader in refuting the pre-eminent role of the scientist in the development of social work knowledge, proposes that practice should inform theory and not the other way around. Scientific theories and naturalistic practice employ distinctive languages. Goldstein asks whether a

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comprehensive conceptual foundation of knowledge is readily translatable into direct practice. Does social work, working with human problems depend on a certain wisdom, a body of knowledge that derives from the experience of doing social work? His answer is yes, – practice wisdom. Practice wisdom can be seen as inherent to the social worker. Carew[11] observed that social workers possess a body of practice wisdom as a basis for their activities. This practice wisdom reduces the use of abstract theories and generalizations from research in their social work practice. It leaves theory building in social work to be an exclusively academic exercise. Carew concluded that 'knowledge developed through scientific methods tends to undermine the knowledge that social workers already appear to possess, their wealth of experience, their skills in interacting with people'[11, p.362]. It is Lyotard[19] who has given us direction as to fashion social work practitioners can communicate and transfer practice wisdom, thereby turning practice wisdom into transferrable knowledge. This diffusion of knowledge, Lyotard suggests, can be done through information technology. Information technology enables knowledge diffusion, decentralization and individuation.

In a futuristic document Dyson[20] et al. suggests that the knowledge characteristics of cyberspace include unlimited knowledge, decentralized knowledge, empowerment and a vast array of knowledge ownership. The various schemes which exist through electronic communication enable the transfer of social work knowledge. Email knowledge transfer is the application of Lyotard's communication[19] and transfer of practice wisdom. Discussion groups, news groups and individual email communication facilitates the transfer of information, knowledge, experiences and practice wisdom of local professional communities. The ability to reach a social worker with the wisdom that one searches for individualizes knowledge transfer and makes that knowledge unique and immediate. It becomes part of the social worker's practice experience without going through a sanitizing process of standardization and regulation as is manifest in journal publications. The inquiring social worker is exposed to a diversity and plurality of knowledge bases as each respondent can be perceived as possessing an independent knowledge base. An example of the expressed value of email communication is indicated by vander Straeten[21] who wrote in regard to the setting up of a discussion group on social work-fieldwork: 'I am in a small two-person undergraduate programme and am grateful for the opportunity to have a dialogue with other field instruction personnel.' The social worker in the process of knowledge acquisition is no longer bound by the constraints of organization but is free, in the spirit of Lyotard[19] to pursue the logic of his or her own activities.

The openness and accessibility of discussion groups to all those interested in the topic enables 'nonprofessionals' to participate in the discussion. This raises a number of issues regarding the characteristics of the participants. In a discussion group on child abuse, ABUSE-L, one participant called other members 'one-sided, ill-informed, self-serving individuals.' In the same group one of the active participants was an engineer. His participation was challenged by child abuse professionals. But the democratic feature of the discussion group brought a participant to declare 'Prove him wrong. Don't try to shut him up.' While this may retain the democratic aura of the discussion group, it does question the quality of some of the discussion.

The discussion group is a means through which information transfer can take place with colleagues. It is usually limited to a subject area. Participants of the group can communicate interactively, initiating information transfer and discussion or replying to an earlier communication. Our study is a preliminary investigation regarding the potential use of the discussion group in the transfer of information within the social work profession. We will analyse two social work discussion groups in order to study the potential of people as sources of information within an information technology framework, the Internet.

Methodology

Two discussion groups were chosen for analysis. One group, the Social Work Discussion Group, SOCWORK, discusses general social work issues. The second group, ABUSE-L, is defined as a professional forum for child abuse issues. SOCWORK was observed for a period of 37 days, ABUSE-L for 43 days.

In the discussion groups three types of communication were identified:

1) information transfer (IT) – the goal of this type of communication is the transfer of information by a participant. This could be for example an announcement of a conference, call for papers, a position available, an article or scholarly paper and information concerning other resources.
2) a request for information (IR) – in this type of communication one participant requests information. This can, for example, be a request for information on a specific topic or programme or a search for literature. Replies can and often do come from a number of participants. These replies can also develop into a new issue being discussed.
3) a discussion around an issue (IS) – the goal of this type of communication is to raise an issue which will lead to a general discussion. Participants can participate once or a number of times as the discussion around the issue develops. New issues can be raised on the bases of a discussion of an earlier issue.

A fourth type of communication is those relating to subscribing and unsubscribing from the discussion group and other administration. These communications are not included in the analysis of this study. For each discussion group the following data were gathered and analysed:

a) the number of participants communicating during the period of observation,
b) the number of communications per participant in general,
c) the number of communications per participant by type of communication,
d) the number of initiated communications.

Results

168 people participated in the SOCWORK discussion group during the period of the study. During this period there were 369 communications, averaging 10.0 communications per day. 64 people participated in the ABUSE-L discussion group. There were 194 communications in the ABUSE-L discussion group which was an average of 3.9 per day.

In the SOCWORK discussion group 6.5% of all participants communicated six or more times (see Tables 1 and 2). These participants were responsible for 30.9% of all the communications. 64.3% of the participants communicated only once. In the ABUSE-L discussion group 12.6% of all participants communicated six or more times. They were responsible for 51.0% of all the communications in the ABUSE-L discussion group. In this discussion group 50.0% of the participants communicated only once.

The main type of communication in both discussion groups was the discussion around issues (IS). Forty-five issues were discussed in the SOCWORK discussion group. Twenty-three issues were discussed in the ABUSE-L discussion group. In the SOCWORK discussion group 65.3% of all participants were involved in a discussion of some issue. In the ABUSE-L discussion 76.6% of all participants were involved in the discussion of some issue. In the SOCWORK group 43.4% of the people participated only in the discussion of an issue. In the ABUSE-L discussion group 56.3% of the people participated only in the discussion of issues.

23.8% of all those participating in the SOCWORK discussion group raised a new issue, 20.2% initiated an information transfer, and 26.2% requested information. 17.2% of all those participating in the ABUSE-L discussion group raised an issue, 28.1% initiated an information transfer and 18.7% requested information.

In the SOCWORK discussion group 23.7% of all participants used the discussion group to transfer information (IT). A similar rate was noted in the ABUSE-L discussion group where 23.4% of all participants used the discussion group to transfer information. In the SOCWORK discussion group 39.4% of all participants requested information (IR) while in the ABUSE-L discussion group 28.1% of all participants requested information. Only 5.3% of the participants in the SOCWORK discussion group and 1.5% of the participants in the ABUSE-L discussion group were involved in all three types of communication activity of the discussion group (see Table 3). A Kolmogorov-Smirnov non-para-

Table 1. SOCWORK Discussion Group by number of participants and communications

	Participants		Communications	
	No.	%	No.	%
No. of Communications				
1	108	64.3	108	29.3
2	22	13.1	44	11.9
3-5	27	16.1	103	27.9
6-9	6	3.5	44	11.9
10+	5	3.0	70	19.0
Total	168	100.0	369	100.0

Table 2. ABUSE-L Discussion Group by number of participants and communications

	Participants		Communications	
	No.	%	No.	%
No. of Communications				
1	32	50.0	32	16.5
2	13	20.2	26	13.4
3-5	11	17.2	37	19.1
6-9	5	7.8	39	20.1
10+	3	4.8	60	30.9
Total	64	100.0	194	100.0

Table 3. Participant types of communications by discussion group*

	SOCWORK		ABUSE-L	
	No.	%	No.	%
Types of Communications				
IT only	18	10.7	8	12.5
IR only	38	22.8	7	10.9
IS only	73	43.4	36	56.3
IT, IR, IS	9	5.3	1	1.5
IT, IR	2	1.2	0	0.0
IT, IS	11	6.5	6	9.4
IR, IS	17	10.1	6	9.4
Total	168	100.0	64	100.0

* IT Information transfer
IR Information request
IS Discussion of issues

CENTRAL LIBRARY

metric test of the data in the tables showed that there were no differences between the distributions of the two discussion groups.

Discussion

The results indicate that discussion groups represent a forum for information transfer. Information requests are analogous to requesting information from an archive or database. The difference is that the request for information is not focused on a specific source but is directed at the members of a professional group who are potential sources of information. This type of communication process is consistent with the social workers' participatory value system where interactive communication on a personal level plays an important role in the social worker's knowledge attainment. It was noted that in most social service organizations, the collection and use of information are basically informal[22].

Information requests have a noteworthy place in the communications of the discussion groups. 39.4% of all SOCWORK participants and more than a fifth of all ABUSE-L participants used the discussion group as a source of information. It is difficult, if not impossible, to know the results of these requests for information. Many requests for information are answered not through the discussion group but rather primarily to the person submitting the request. Therefore we do not know how many requests were answered and the quality of the information provided. One may surmise that, as information requests do have an important share of discussion group communications, discussion groups' participants regard it as a source for information retrieval.

Discussion groups are also a source of unsolicited information. Information transfer (IT) is this type of communication and it accounts for between a fifth and a quarter of all communications. This type of information transfer is comparable to announcements and bulletin board type of information. Through this mode of information transfer a discussion group participant can have access to developments in the discussion group's area of interest. The value of this type of communication is that it is proactive in providing information. We have no indication of how much action is taken as a result of the information provided in this manner.

It is the discussion of issues as information transfer which is especially interesting to information specialists. Is the discussion of issues as it appears in the discussion group a source of information? Communications in the discussion groups as we saw were dominated by a small number of people. Our data show that in both groups a small number of participants were responsible for nearly one-third of all communications. Similar results were found when looking at those who participated in the discussion of issues. Again, there is a core group which dominates the discussion. In the SOCWORK group 6.4% of all the participants discussing issues made up 27.5% of all communications. In the ABUSE-L group 6.1% of all the participants discussing issues made up 37.4% of all communications. Smith[23] reached similar results in his study of the Whole Earth 'Lectronic Link (WELL) at virtual community of 223 discussion groups. He found that most users of WELL do not actively participate in the discussions and that 50% of all postings in the WELL are generated by 1% of all members of the community.

What are the ramifications of this on information transfer? As our thesis is that each discussion group member is a potential source of information the dominance of group discussion by a small group limits information transfer. The large numbers of discussion group members who for example participate only once in a discussion of an issue can indicate that the discussion group is not reaching its full potential as an information resource.

Implications and issues

Using social work's participatory character as a baseline one may conclude that the high deviation in the number of communications per participant is inconsistent with social work's normative behaviour. Interactive communication as a source of information transfer which is a functional goal of the discussion group may not have reached its full potential in the two groups we have studied. Why is this so?

In a study on the impact of policy on information technology programming Berman, Eaglstein and Phillips[24] found that whoever controls the technology controls the agenda of discussion of that technology. In their context it was found that resource policies promoted by management compete with service policies of social workers. Management familiarity with information technology rewards operational advantage in resource application of information technology at the expense of social work personnel. Social workers failed to incorporate information technology within the working processes.

In our context the situation reveals itself as the dominance of academics in using information technology *vis-a-vis* the social work practitioner. The use of computers is a part of the academic setting. Academics through the university setting have greater access to programmes of interactive communication than practitioners located in social service agencies. One notices that it is the academics who are the most participatory population in discussion groups. On the other hand, it has been noted that among social work practitioners there is a resistance to using information technology[25-28]. The social worker views information and its operating systems as dynamic, everchanging and not necessarily conducive to the use of the computer[10, 29]. A result of social work practitioner resistance to information technology is an underdevelopment in its use in social service agency settings. Social work practitioners do not have access to computers, and particularly to computers that provide telecommunications access.

The control of information technology by academics appears to limit the participation of social work practitioners in determining the agenda of the discussion group or the contents of the communications. The topics raised in the two discussion groups shows that policy issues dominate the conversation. Of the sixty-eight issues raised in the two groups only six were related directly to social work practitioners. The discussion that prevails is more abstract in nature, far removed from the practice of the social work practitioner.

This phenomenon, policy issues as a dominant topic in discussion groups, was a topic of discussion in the MISC.EDUCATION newsgroup. The subject under discussion was: 'Why aren't more teachers posting here?'. Among the replies given was one by Dawson (1995) which is especially relevant to the social work practitioner:

> I'd suspect it is because the things teachers often think about are the immediate concerns of teaching, such as supplies, how to deal with different kinds of students, how to deal with different kinds of parents, how to deal with their administrators, different teaching strategies and techniques and not with the kinds of policy issues we discuss here over which they feel they have so little control. Of course these policy issues are vitally important, but in the daily grind, they have more immediate concerns.

I suspect a social work practitioner would have said the same thing in regard to social work discussion groups. These groups do not have discussions which are relevant to social work practitioners. The result is that the social work discussion group fails to inculcate a social work practice value framework. An interesting communication in the ABUSE-L discussion group alludes to the academic orientation of the discussion group. Throughout our paper we noted the interactive nature of discussion groups, its democratic orientation and its accessibility to different types of users. Yet the following communication to an earlier writer demonstrates that the discussion group is still in the hands of the academic mind: 'Please provide citations from the peer-reviewed literature that will support this view.'

Where does this leave the social work discussion group as a forum which provides information transfer? It appears that what has been written about the social work journal and its relevance to the social work practitioner is also true in regard to the discussion group. The discussion group is not a setting by which the practitioner has been able to acquire knowledge. In spite of its interactive setting the discussion group has not devolved into a forum which the social work practitioner can use as a medium for knowledge transfer. Social worker practitioners have not increased their access to practice wisdom even though the technology to make it accessible exists.

This situation is a challenge to the information specialist. Information sources such as the scholarly journal and/or the Internet discussion group do not facilitate the acquisition of knowledge of social work practitioners. These information sources are controlled by a specific population, social work academics, who create an information forum which is irrelevant to the social work practitioners. The information specialist should consider this situation in developing appropriate information transfer modules for special populations like social work practitioners.

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Councillors and information: a study of information needs and information provision

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Abstract
Little attention has been given to the needs of local authority councillors for well over a decade; a period in which the changes imposed by national government have made it necessary for councillors to keep up to date in all areas of local government provision. This paper attempts to provide a brief assessment of the information seeking behaviour of local authority councillors and the importance of information to them. By interviewing a cross section of local councillors and sending a questionnaire to selected information providers the study has identified the sources of information available for and most used by councillors. The research has shown what information the councillors consider important and their methods when seeking information. The survey of questionnaire responses has exposed the similarities and differences in the ways that information is provided for and taken up by councillors. Pointers for further research are suggested.

Introduction

There are about 25,000 councillors in Britain's local authorities. They are elected local representatives whose backgrounds are as diverse and various as the reasons for their willingness to stand for office.

There is considerable public debate over the changing role of councillors and the changing patterns of demands upon them. They now, more than ever, when local government is undergoing major structural reviews, have to assimilate much information of increasing complexity. They need access to information in order to assess problems, consider alternative solutions and monitor how effective those solutions are.

Effective participation in problem solving and decision making is only possible if councillors are given the kind of information they need in a form that is readily understood. Provisions for training, support and information for councillors are little stated in law and depend mainly on local conventions and practice. Where information units do exist they range from single-person operations or individuals based within a conventional reference library to substantially larger undertakings with their own dedicated staff and resources. Most of these units serve the dual purpose of serving both elected members and council officers. Few concentrate solely on information provision for members.

The Local Government Management Board has had discussions with the three main political parties and as a result is working on an elected member development project to make councillors more effective both as recently elected representatives and as experienced members playing major leadership roles within their authorities. The main aim of the project is to identify training needs and it will look at the role of councillors and identify the abilities councillors need to be effective. However, it will not be looking at the information needs of councillors. This apparent lack of interest and the fact that there had been no research into the information needs of this strategically important group for over ten years led to the decision that a study in this vital and interesting area should be undertaken.

Objectives and scope

The object of the study was then to ascertain what the information needs of councillors were and whether adequate information and research services existed to meet these needs; also what further support in terms of information provision and research services would help to make councillors more effective and whether information services can be delivered more efficiently. For at the moment information provision for councillors appears to be piecemeal and uncoordinated.

In addition to reviewing the published literature on the topic a medium scale survey was conducted. There were two prongs to the research: (1) an interview study of the information needs and information seeking behaviour of councillors; (2) an examination of existing information provision for councillors.

Literature review

In 1967 the Government appointed the Maud Committee to report on the Management of Local Government[1]. Its terms of reference were 'to consider in the light of modern conditions how local government might best continue to attract and retain people of the calibre necessary to ensure its maximum effectiveness'. The Committee found that 'increasing demands are being made today on members in understanding technical, economic and sociological problems'[2]. This led them to the conclusion that local authorities should take responsibility for informing their members of scientific and technical developments and of research into social problems as well as understanding government and management. The Committee recommended that 'training courses should be established at universities and colleges for council members'[3].

In 1972 the Department of the Environment produced *The new local authorities management and structure*[4]. A working group chaired by M.A. Bains sought to advise on management structures for members and officers. One of its recommendations was that it should be the specific responsibility of an officer of suitable calibre to organize the provision of information to members but little was said about what information should be provided or how it should be organized.

Starting from the principle that information is not something to be considered in isolation from people who need it LAMSAC (Local Authorities Management Services and Computer Committee) set up a Local Authorities Management Services Advisory Council working party on the information needs of elected members[5]. Its report, published in 1980, was the result of a review and examination of information delivery practices at that time and considerations of the costs, benefits and implications of improving the current systems. It also looked at the gaps in demand and at the member/officer relationship with respect to the supply and use of information. The report implied that the provision of information to the member should be controlled by an information specialist with the ability to take an objective but informed view of incoming information and who could decide which information needed to go to which member. It also suggested that services which could be provided were library facilities and computer systems such as Viewdata etc.

In a paper presented at the Aslib Conference in 1981 Alan Peacock suggested that many information units which had been set up in the 1970s had now been disbanded leaving only a handful of survivors[6]. He held the view that there was an opportunity for the information profession to demonstrate that it has some very relevant skills which could be of use for information provision for council members.

In 1982, in a report on Support Services for councillors, the Thomas Committee of Inquiry, set up by the Association of councillors made 26 recommendations for improving support for the elected member. Information was one of the six main areas on which the report focused. A follow up survey in 1985 showed that only limited improvement had been made across the range of services. The survey found that of the authorities surveyed:

- library access for members was available in 77%
- information on new legislation was provided by 61%
- press cuttings services for all members were provided in 27%
- research facilities with member access were available in 18%.

1985 saw the passing of the Local Government (Access to Information) Act[8]. This piece of legislation gives members the express right to see any document containing material relating to business to be transacted at any meeting, but not in the area of particularly sensitive, often personal information. In these particular cases councillors have to establish 'the need to know', some particular and correct reason which is related to their carrying out their duties in their capacity as representatives of their constituents. Having obtained such information, however, the councillor may only use it for purposes relating to his or her role as an elected representative and may not disseminate it widely outside the authority.

Terry Hanstock has attempted to identify the basic information needs of local councillors[9]. He considers that as councillors are inundated with information the 'information flow' needs to be controlled by an information specialist who is aware of the interests and responsibilities of specific members. The author is of the opinion that if a local political party with a majority takes an enthusiastic view of information there is more likelihood of there being staple provision of an information service for councillors. He discusses whether such a service should be offered according to status and to what extent, but points out that as members and officers have similar information needs the provision of a service to both might be the most realistic and cost effective model to follow.

The 1989 Local Government and Housing Act[10] allowed political groups on authorities to have political assistants, just as MPs have research assistants. As the councillor's role is, in theory, part time, this provision can help to provide research for councillors.

A 1990 Audit Commission management paper on the changing role of local authority members is unusual in that it stresses the importance of information provision[11]. It puts the responsibility for ensuring efficient information systems firmly at the door of the members themselves, suggesting that there is need for change and recommending that councillors focus on their information needs, their skills and support along with their own performance and the organizational framework within which they work. Two publications published by the Local Government Management Board, *Housing: a councillor's guide*[12] and *Local government: a councillor's guide*[13] also stress the need and right of councillors to have access to information and research and library facilities. They do not, however, make any recommendations on how this access should be facilitated.

Professor John Stewart has recently made the point that support services are more than justified if they enhance the effectiveness of councillors[14]. Continuing the debate, the *Report of the working party on the internal management of local authorities in England* recommended that the local authority associations should, amongst other things: 'Illustrate ways of providing better quality information to councillors to assist them in their responsibilities as leaders of their communities, ward or divisional representatives, and as consumer champions'[15].

On a more practical note, one local authority that has given serious consideration to information provision for councillors is Swansea City[16]. Councillors have direct access from their homes to the authority's central database – Members On-Line System (Mols). Access to corporate data and facilities such as electronic mail are provided. The dial-up link allows enquiry only access to ledgers, housing repairs, capital monitoring and committee minutes. As skills levels vary enormously, a high level of investment, in the form of time, from staff is necessary to get the training right. Support from the highest level is necessary if uncooperative individuals are not to be allowed to undermine the system. Goodwill and flexibility on the part of staff is essential. The actual cost of such a system is unclear and because of the nature of the system and the varied workload of the councillors it has not been possible to perform a full post implementation review. However, anecdotal evidence suggests that it is worth while. One leading councillor was of the opinion that councillors may now make better informed decisions through access to supplementary information and that they have effective representation through faster input, processing and response to enquiries and complaints. Finally, it was suggested that the main performance indicator to date is that no councillor has offered the equipment back to the Council!

Methodology

A sample of fifteen local authority councillors located in London and the Home Counties were chosen for interview. All the three main political parties were represented. The councillors were chosen after being recommended by word of mouth from within the political community. This ensured a high level of co-operation. They were a mix of recently elected and senior members, members of the ruling group and opposition members and both sexes were represented. The group also included a member of an ethnic minority and a member disabled by problems of impaired vision.

They were initially approached by letter, followed by a telephone request for an interview. Of the 15 councillors who were approached 14 agreed to be interviewed. This was a pleasingly high response rate given Usherwood's opinion that 'councillors were extremely busy and interviews with them would be difficult to arrange'[17]. Fifteen basic questions were asked ranging over the need for and use of information. All the councillors who were interviewed were happy to give their time and were encouraged and enthused about talking about their needs. Some regretted that perhaps their answers were not what the researchers wanted to hear or were less than helpful (i.e. about their use of libraries), but they were reassured that it was intended that the research should be neutral, not partisan.

Obtaining a sampling frame for the questionnaire survey of information providers was not easy. It was not possible to obtain a list of Members' Services Officers from the Local Government Management Board or a complete list of members from the Affiliation of Local Government Information Specialists because of the reservations of the holders of those lists in relation to the provisions of the Data Protection Act, 1984. The units and post holders were, therefore, identified by reference to the Library Association list of Local Authority Information Sources, a list of London authority nominated information collectors to the London Research Centre Library and by word of mouth recommendation. There were no geographic limits placed on the sampling frame, other than that organizations be within England and Wales.

In all 32 units were approached. Each was sent a copy of the questionnaire with a covering letter and stamped, addressed envelope for the reply. The questionnaire was addressed to the head of the Members' Information Unit or information resource and contained 31 questions, which were designed to ascertain what facilities were available to elected members and how well they were exploited. 27 replies were received, 23 of which enclosed completed questionnaires. Some of the respondents also included copies of their own guides and publicity material.

Profile of councillors

The majority (eight) of the councillors interviewed had been serving their local authorities for between five and ten years. Four had been serving for under four years and two for over eleven. Six of the councillors stood as Labour members; five were Liberal Democrats and three were Conservatives. The councillors featured came from four different types of authority. Six were on district councils; three were on London borough councils; two were on county councils and one was on a large parish council. Two of the councillors were on both district and county councils.

The sample group – like councillors in general – was elderly in composition. Seven councillors were over 55; four were between 46-55 and just two were under 45. The youngest councillor was 36. Five of the sample were ordinary members; the others included a mayor, three were chairs of committees; four were party spokespersons and one councillor was a vice-chair. Of the fourteen councillors who were interviewed ten were men and four women.

Identifying how much time they spent on council work was the hardest part of the interview for most of the councillors. Only one said, very definitely, four hours a day, six days a week. Another said that he was not prepared to put a time on it. However an average of about 28 hours per week would not be far out; the range being from four hours to 60 hours. It was obviously meetings that took much of their time, for seven councillors estimated that they spent between five and ten hours at meetings each week and six suggested that they spent more than ten. Only one said that he expended as little as one hour on average. Time taken on ward work varied enormously. Some spent only one or two hours whilst another spent as much as 38. When it came to finding information most (eleven) of the councillors estimated that they spent less than five hours a week, but this was generally between four and five. Three said that they took between five and ten hours. Seven councillors spent less than five hours reading documents. Five spent between five and ten hours and two said that they spent more than ten hours on reading through documents.

Information needs

Of the types of information needed all the councillors rated names, addresses and telephone numbers as invaluable – showing how much they rated informal sources of information. Most of the requirements in this area were met by the information in the diaries supplied to them by their own particular local authority. Information on the policies and procedures, and financial information relating to their own authorities, was regarded as being of average importance by most of the councillors. They considered that this information was also readily available. Several cited induction courses run by their council for new councillors as providing very useful background to these areas of information. They considered that statistical information was useful for purposes of comparison with other authorities.

Conference and training information was rated as very important by five of the councillors, but relatively unimportant by five. As in the case of the reply to most questions there was little consensus, stressing the individuality of need. The five who considered information in this area to be unimportant did not seem to have strong feelings, nor were they moved to elaborate. Those who considered it important felt that training was always useful for self development and that it was important to make contacts with and receive support from other people with the same sense of direction and purpose. Not surprisingly, there was more consensus about the value of information on local organizations. Eleven of the councillors considered this to be invaluable.

Politicians of all types have to field questions on almost every subject under the sun. There is an expectation among the public that politicians must have a view on everything. Many politicians overcome this impossible brief by delegating the query on to a subject specialist. In our sample, while one 'rogue' councillor named only one area of special interest another named eight. On average, four or five fields were cited. In all, 18 different areas of interest were raised. The topics of principal concern were: Childcare/Education and Commercial/Economic development, including employment insecurity and the effects of compulsory competitive tendering (each mentioned five times); transport, traffic and road safety (listed four times); and Environmental issues and Housing and Social Services (both mentioned three times). Mentioned also were Health, Leisure, Planning, the Voluntary sector, Ward issues, Finance, Fire and Rescue services, Information technology, Leaseholds, Legal issues and Trading Standards.

As to the amount of information needed or shortage of information perceived, four said unreservedly that the amount received was about right. Of the ten who said that they received too much information the majority qualified this reply. The common view was that although there was often a flood of information much of it was superfluous, and that they did not necessarily get enough of the sort of information they wanted. This fault was usually laid at the door of council officers who, it was considered, held back information, perhaps for several reasons. One councillor said that the information given by officers was sometimes misleading and that officers had their own agendas which they tried to push through. Another councillor thought that professional officers should be more communicative, especially on sensitive issues and that they should be more understanding of what the councillor wanted to know. More than one councillor thought that officers were too slow to respond to their enquiries, although one did add the comment that 'officers are very busy'.

One councillor said that although too much information was received it was all read, 'because I believe in doing a proper job'. Of the councillors who thought that the amount of information received was 'about right' one commented that they were fortunate in that the officers knew how to give just the details that were needed.

Half the councillors considered that their information needs had changed during the time that they been on the Council. Three long serving members and one who was recently elected shared the opinion that the more they learnt the more they needed to know. The long serving members said that because of changes imposed by national government they needed to keep up to date with changes in education, social services and housing and to be more aware of the activities of non-governmental organizations such as hospital trusts.

Two councillors said now that they had been on the council for three years or so they were beginning to *know the ropes* and did not need to ask as many questions as when newly elected. In this respect one of them commented how useful the induction course for new councillors run by the local authority had been. One member said that when he was newly elected he found himself asking questions after the event, but now that he was more experienced he was able to identify areas of information need ahead of time.

Sources of information

Specialist information

This consists of Council information, including committee minutes and reports, information from local authority associations and magazines, newsletters and advice notes from the political parties. There are also other organizations which exist specifically to provide information for local government.

The elected member has the right of access to any non-confidential documents produced by the council, of all committees and sub-committees. All of the councillors were satisfied that they received all of the information of this nature to which they were entitled and more besides. Sometimes the *diplomatic bag* dropped through the letter box several times a week, containing committee agendas, minutes, reports and copies of additional publications produced by the council. All the councillors spent some considerable time in reading this material. The average time spent was four and a half hours.

There are several associations which operate to serve and promote the interests of the different types of local authority. They provide a forum for the exchange of views between member authorities. They often provide financial, legal or general advice and issue specialist publications which deal with matters of interest to their particular members. The bulk (ten) of the councillors mentioned that they found the publications from the relevant associations useful.

The three main political parties have established their own councillors' associations. One of the main aims of these associations is to provide a briefing service for councillors. They also produce magazines, advice notes and research papers. All of the councillors said that they read these publications, but only the research and briefing papers were singled out as really important sources of information.

Newspapers and journals

In order to ascertain how important councillors thought news was they were asked if they read any of the newspapers or magazines which were generally available. Only two of the councillors said that they did not read any newspapers at all, which in itself is very surprising. One said that he did not think that newspapers could be trusted and that his wife read the local papers, but when she read out snippets it was always information he already had. The other considered that he received the news he needed from other sources such as party and council news letters. None of the councillors admitted to reading the tabloids with the exception of the *Evening Standard* in London. Those who read the papers read the broadsheets which matched their political opinions; *Guardian, Independent, Observer, Sunday Times, Telegraph and Times*. Sometimes they read more than one on both weekdays and Sundays.

The local papers were read – if only the headlines, and parish magazines were also cited as very useful sources of information. Much less popular than newspapers were magazines and journals. Few journals or magazines were read. Just two councillors read the *Local Government Chronicle*, one read the *Municipal Journal*, one, *Inside Housing* and one the *Times Educational Supplement*. Possibly relevant specialist titles such as *Roof, Planning, Community Care* or *Highways* went unread.

Informal sources

With one exception the councillors said that they relied on guidance from other people by listening and talking, and all except one of these said that they listened to other councillors. The one who did not, said that the other councillors were too wrapped up with their own concerns to be of much help. Some of those who listened to other councillors said that it was useful to hear opinions from all shades of the political spectrum and also from party colleagues. Five of the councillors said that they found the opinions of the staff of the local authority extremely useful: 'very good, a wonderful source, trustworthy, extremely useful and especially regarding internal politics'.

It was mentioned that the electorate was also a useful source of advice, guidance and information, as was the party agent and last but not least the advice of a spouse was considered invaluable by one councillor.

Information systems uses

Personal information systems

The councillors were asked to describe their own information keeping methods in order to establish what type of information system they considered it essential to have to hand. Three of the councillors used computers for information storage. Two kept information on a word processing package and a third used database software. Most of the remaining councillors kept their information in filing cabinets and box files. Two used Filofaxes as well. One said that he used his head and 'stacks in the dining room'. The length of time for which they kept information varied. One obviously organized councillor kept detailed records of every person who had contacted him for help over the twelve years during which he been on the council, together with a subject index. And yet there was one councillor who claimed that he kept no information at all.

Apart from one councillor who said that he used email none of the councillors accessed information for themselves by computer. One of the councillors did say that he would like to be able to and hoped that the local authority would soon provide all councillors with PCs and the means to access a council wide information service.

Specialist in-house information services

Not all councils have their own information and library services and, indeed, only one of the councillors interviewed had access to such a service. However the one councillor who did found it very useful. This service was in fact provided by the local authority's own library service. For this councillor a weekly visit was a must and that a *shopping list* was handed in, which asked for information ranging from quotes from Hansard to government reports, to articles in the press and even finding correct telephone numbers.

External sources

The public library was the most frequently mentioned external source. Over half (seven) the councillors said they used it. One councillor deprived of a specialist service nevertheless used the local public library reference section in a similar way and found the service extremely useful. Fascinatingly, a councillor who had a friend who worked in a public library said that he contacted the friend for information on occasion but that he would not have dreamt of going to the library as a 'user'. Two of the councillors used the public library once or twice a month and four used it occasionally. None of the councillors had ever found reason to find fault with the service offered by the public library. The word most used to describe the service was 'excellent'. Of the six councillors who said that they never used the public library as an information source one said that he did not have the time. The other five seemed surprised to be asked the question, as though it had not occurred to them that the public library would have the sort of information they needed. .

Illustrating the breadth of interest and the myriad organizations involved, 20 other organizations were cited as having been consulted at one time or another in the course of duty. By far the largest group was of organizations concerned with welfare and social issues. These included the Citizen's Advice Bureau, Relate, welfare rights groups, the Race Equality Council and, not an organization perhaps, but cited twice, the Vicar. The House of Commons Library, local authority information organizations such as the Local Government Management Board and the Local Government Information Unit as well as their own party were sources used for local and national government enquiries. The Commission for New Towns, the Parks Trust and the Council for the Preservation of Rural England were all approached with queries on specific issues of local concern such as a planning application for a new golf and leisure complex or an hotel or quarry. The local police or a local court clerk were sometimes approached with informal queries about the law. One councillor used the library of the Cranfield Institute to answer many of his questions and also said that he may, in the near future, use the Internet.

Obtaining information from these other sources had not presented any problems, though more than one of the councillors did think that how you ask is important. Two of the councillors were less than happy with what they described as the *quality* of some of the information they received from external bodies.

There are specialist organizations which exist primarily to provide information services to those involved in local authority work. The London Research Centre, a successor authority to the Greater London Council, provides information, research, consultancy and specialist advice to councillors and officers of all London Boroughs (who mutually pay for its upkeep) and other subscribers. Its library provides a document supply service which features the distribution of daily and subject speciality lists of abstracts. These cover items of interest in the national, London, specialist and academic press. Hard copy and online formats are available. One of the London councillors said that these were essential reading. LGC Net, the online database marketed by the *Local Government Chronicle* provides access to government and local government information including Hansard and government reports. Although the service may have been accessed on behalf of the councillors without them being aware of it, only one actually cited it. By way of explanation this councillor said that she had been the only councillor in a group of officers when a demonstration of the service had been arranged.

In total four councillors said that they did not use external sources. One of these was the councillor with access to a local government information service.

Additional comments

One of the councillors had access to a political assistant who did a considerable amount of very useful research work. The councillor with impaired vision would have liked to have better access to information via sound systems and to be supplied with a modem. Four of the councillors felt that they would like to be provided with better access to more impartial information and honest opinions and one of them suggested that the provision of a communal space with secretarial support and an information unit which was able to provide unbiased guidance and information would be a useful contribution to the efficiency of the work of the councillor.

Information provisions for councillors

What then of specialist information providers in the field? Well, the services do vary in whom they serve. Of the services surveyed over a quarter (6) were provided solely for the use of members. The number of staff hours worked varied from 210 a week in a large authority (where each of the three main political parties had two staff each) to 20 in a relatively small authority. The average number of staff hours was 87 and the average number of staff, three.

Eleven of the units provided a service to officers of the authority as well as councillors and it was not possible to identify how many staff or how much time was used to deal with member enquiries. These units were staffed by as many as eight officers and as few as one. The average number of staff was five. In two authorities councillors were identified as a user group but the units also provided local government information to officers of the council and the general public. One public reference library did not provide a separate service for councillors but did record use by them. This service also acted as a first port of call for enquirers and often passed them on to other sections. In two authorities the information requirements of the councillors were dealt with on an *ad hoc* basis by policy and research officers. It was estimated that approximately 30 hours per week were spent specifically in dealing with members' information enquiries.

Services offered

Fifteen of the units surveyed provided guides to their services. Those that did not were either dedicated members' services units or policy units where information provision to councillors was only part of their work. Ten of the units recorded the names and interests of members in order to alert them to the publication of information which may be of interest to them. Two said that the service was only provided if specifically requested and one of the units which did not provide such a service had done so in the past when the unit had more staff.

Only five of the units did not provide a cuttings service. Those that did either compiled it themselves, or the councillors received it from another council department. Two members' units and one district council did not provide a briefing service of any sort. Of those that did most produced their own. Most were general in nature and issued periodically but some covered specific topic areas and were published irregularly. One used the bulletins issued by the London Research Centre and another was a member of a local co-operative group that issued briefings as a joint venture.

The use made of the information units varied widely. Some units reported that as few as 10% of the councillors used the service, some as many as 100%. However, only six of the units kept records of individual use. One unit provided a slightly more active service to the leaders of the political groups. Where records of use were kept there was, unexpectedly, no appreciable difference in usage between newly appointed or long serving members' usage. It was pointed out that requirements may be different but not the usage. Six units reported a higher percentage of men using the service than women but differences in political affiliation were only slightly noticeable, with a few more Labour members using the service than any other group. There was no correlation between the provision of an induction course and the percentage of use.

Stock

As the units differed in their purpose so did the size of the bookstock and the amount of information held. One unit did not keep any books at all. This one and six which had fewer than 600 books were mostly members' services units or policy units. With the exception of two units which had a stock of 20,000 and the public library with a stock of 300,000, the remaining 14 units had varying stock sizes from 1,500 to 12,000. These totals have to be treated with care as some units counted only commercially produced books whilst others included information which they generated themselves. And others included pamphlets. One service, whilst only having a stock of 50 to 60 books also had access to a full law library. All the units kept journals and newspapers, although not all knew how many they took and some just said, 'too many'. Where numbers were given they varied between two and 86.

Where lists of holdings were returned it was interesting to note that the same titles recurred. The journals were those which related to local authority management and policy or to matters on which local authority practitioners would need to be informed. The newspapers were those with local interest and the national broadsheets. All conceivable types of local information were kept by nearly all the units. Where, in one or two instances, ward or division information or statistics were not kept there was easy access to them. Only one of the units did not keep local handbooks, newspapers or reports. 20 of the units kept legislation or had nearby access and nineteen kept government circulars.

Online information provision

14 of the units used computers to access information by using either online services or CD-ROM or both. Both stand alone databases and those accessed via a host were used. Dialog was mentioned seven times and Data-Star six, with ESA-IRS mentioned five times and FT PROFILE four. The London Research Centre databases were mentioned five times and LGC Net four. One unit went online to access the members' database of its own authority and also Auto-route. Ten of the units also used CD-ROMs for information and one used CD-ROM only. By far the greatest use that CD-ROM was put to was for bibliographic material with ten units using it for this type of information. Seven used full-text databases and six used CD-ROM for reference purposes. Only two units had multimedia.

Co-operation with other libraries

Only three units did not borrow from other libraries – and these three were the ones dedicated to members' services. All other units borrowed widely. Not all kept records of borrowing, but of those that did it varied enormously from once a month to 80 times a month. The units that went outside for information most were amongst those that served both councillors and officers. All units borrowed widely, obviously going to the most appropriate source, whether within their own authority, the British Library or specialist libraries such as that at the National Institute for Social Work.

Conclusions and recommendations

Given their numbers and general importance in the daily lives of many of us it must be surprising that councillors are so little studied by information professionals. It can only be because they are a far flung group, whose co-operation in research studies can not always be relied upon.

In this small-scale survey the councillors interviewed, without exception, aspired to fulfil the ambitions their electorate had for them. They were strong minded individuals who needed to be sure in their own minds that their information, however obtained, was the best available. They considered that in order to make the right decision or give the best advice they must have their information needs fulfilled quickly and willingly. In their information requirements there was scarcely any variation between the councillors that could be attributed to their political affiliation, age or occupational background. Nor was their status or length of service significant in any way. The only characteristic that could be identified as an important variable was gender. Three out of the four women councillors indicated that they needed information in considerable quantity for all aspects of their work. The two councillors who had most resources available were women and they certainly suggested that they exploited them to the full. The third woman was the only councillor who did not have access to a separate information service or special help, and who actually said that such a service should be provided. The data provided by the information units, however, suggested that their services were more used by men.

Information needs are very specific to the individual and it seems that some councillors do not know what they need to know or what to ask. Some councillors have a question to ask and then think of a person or organization who may be able to answer their question. They do not generally think of researching the problem for themselves. Although the councillors stated that they were generally satisfied with the information resources that they tapped there were, nevertheless, gaps which they found difficulty in filling. Some seemed to flounder if officers did not supply the answers, suggesting, perhaps, over reliance on officers.

It is difficult to ascertain how much idea councillors have of their information needs. There appears to be, in some instances, an unquestioning acceptance of what is or is not provided whether or not it is adequate or sufficient. 'What you've never had you never miss', may often be true in relation to the provision of information services. And yet, where a councillor had access to an information resource it was described as 'excellent' and 'invaluable'.

The survey of the councillors' information needs automatically leads to consideration of the information services which are available in some authorities and to what extent these are exploited by the members who have access to them. It is difficult to quantify the use made of existing information services. Not all information officers kept statistics of use and where figures were given they varied enormously. These could not be related to type of service or whether induction courses were offered. There does not appear to be a relationship between age or seniority and use.

The introduction by some councils of induction courses for councillors has been appreciated by new councillors. They provide an opportunity for members to get an overview of the functions of the different departments, to meet officers and their fellow members and to ask questions. Library induction courses should be equally valuable but the research has shown that take up of the information service is not always as enthusiastic in some authorities as in others. Some services appear to offer a wealth of information of which councillors do not avail themselves.

One of the key questions that needs to be asked is: to what extent does the local authority provide a service that enables councillors to be fully informed in order that they may analyse issues and take decisions? A planned information strategy is important.

Further research in relation to the information requirements of and services for councillors could be profitably carried out in the following areas:

a. the experience and opinions of councillors from authorities where information units are provided compared with those of councillors without the provision of such a resource;
b. the information needs of information providers; the organization of their education and training;
c. the provision and funding of information services for councillors;
d. possibilities for co-operation between information providers in geographical areas.

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Using the Internet as a strategic business tool

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Abstract
This article discusses the potential benefits of using the Internet to conduct business – to boost business productivity and to enhance business competitiveness. Six key Internet tools and how they can be used to support online commerce are briefly introduced. Ways in which businesses are capitalising on the use of the Internet as a major strategic tool for commerce are described. The extent to which local firms in Singapore are tapping into the Internet to increase business profitability is also outlined. While there are currently some problems hampering a more widespread adoption of Internet commerce, chief of which is the issue of security, there is nevertheless determined and concerted effort to resolve these.

Introduction

Much has been written about how the growth of the Internet described commonly as 'phenomenal' and 'explosive' can dramatically change business practices. In the last decade many organizations have in fact been exploiting the potential of the Internet as a major strategic information tool for commerce. One study by Cronin et al.[1] for instance reported that there is currently 'extensive sophisticated and creative use' of the Internet in support of the competitive intelligence function in business enterprises. The study highlighted the fact that many companies, large and small, are already using the Internet to gain an edge in an increasingly competitive business environment. The companies which responded to the study felt that they were able to monitor the competitive environment with greater ease than before, thanks to Internet access. There is little doubt, it seems, that the Internet will become increasingly important to the business population as a whole.

Internet tools for online commerce

What a business can accomplish on the Internet is defined largely by the tools supported by the Internet. The most important tools on the Internet are: the electronic mail network news (USENET) FTP (File Transfer Protocol) Telnet Gopher and the World Wide Web[2,3]. These Internet tools allow a business to provide information and services online to client users. Selecting and using the right tools is essential to a successful Internet business strategy. The following is a brief overview of how the key Internet tools mentioned above can be used to support online commerce.

(i) Electronic mail

Increasingly email is becoming the dominant form of business communication and customer interaction as its advantages become evident to business people. Besides reducing postal and telephone charges it helps to improve communication and productivity by breaking down distance and time barriers and by speeding up the decision-making process through the provision of a forum for replies or clarifications. In terms of improving customer interaction there are two things that can be done. Firstly, one or more mailbots can be set up to deliver information about the company and its products to customers on demand. Secondly, a mailing-list server can be set up to let people who subscribe to a company's service receive anything it wants announced. At the same time it allows the business to receive customers' feedback and to respond accordingly.

(ii) Network news

Network news is delivered via the UNIX-based network called USENET. USENET discussions are called newsgroups. Businesses can make use of these network newsgroups to participate in discussions in areas of shared interests or to communicate with potential customers. The USENET community is generally hostile towards businesses trying to advertise their products or services indiscriminately. However some companies have successfully negotiated for and created acceptable advertising zones where businesses could place commercial advertising product information promotional offers and price lists on USENET.

(iii) FTP (File Transfer Protocol)

FTP is a popular tool used for sharing information and software on the Internet. For businesses, FTP is a cost-effective way to deliver electronic documents such as newsletters or catalogues to Internet users. Customers can easily download these files to read and run at their local sites. FTP is also commonly used for making available shareware and other commercial software programs for downloading and evaluation by potential customers.

(iv) Telnet

This allows a user to connect directly with other remote computers on the Internet and to operate them interactively. With Telnet it is possible to access and use Bulletin Board Systems, databases, search tools, services and files not otherwise available on one's host computer. Telnet may be employed for the purpose of doing market research or to set up an interactive storefront on the Internet.

(v) Gopher

Gopher, which used to be very popular before the World Wide Web made its impact, is an information system used to organize and distribute information on thousands of servers across the Internet. Gopher is easily accessible as all of Gopherspace is searchable by keywords. Once at your site users can read published information or conduct business at a virtual storefront. Customers may enter their credit-card information once via a form and then choose a unique account name and password. When making a purchase they can just provide their account name which is used to locate their credit-card information.

(vi) World Wide Web

The World Wide Web is the fastest growing Internet tool due to its ability to handle hypertext links, graphics fonts, sound and video. It allows an Internet user to view graphics files and video clips or listen to an audio track, as well as retrieve information. Any business can take advantage of the explosive marketing opportunities of the Web by establishing a Web presence – from a simple advertisement to a full-service virtual storefront. In fact, many businesses are converting from Gopher in particular to this new infrastructure for conducting virtual commerce.

The growth of Internet business

The Forrester Report which analyses the impact of technology on consumers estimated that of the total retail sales of $1.5 trillion in 1993 in the United States $53 billion was catalogue sales, $2.5 billion TV shopping and only about $200 million were spent on online shopping on the Internet[4]. But the report predicts online shopping will grow to $4.8 billion by 1998. There are a number of reasons for the anticipated increase in online shopping. There is rapid expansion of networks with more women coming online. Online presence is cheaper than CD-ROM catalogues which are in turn cheaper than print catalogues. Online information is current and interaction with customers and immediate ordering are possible. More people are purchasing powerful home computers and connectivity cost will fall as the market continues to grow and new options such as cables, ISDN and wireless become available.

In fact many businesses are already capitalising on the use of the Internet to enhance their competitiveness in a variety of ways.[1, 5, 6, 7, 8, 9]

(i) Business intelligence

With its worldwide scope and volume the Internet is probably the single most valuable tool to an organization for gaining timely and significant insights into overall market trends and competitive pressures. Strategic insights can be gleaned from the large and expanding number of corporate FTP, Gopher and WWW sites as well as the various technical, business, vendor- and product-specific discussions in newsgroups. The Internet can be expected to provide the most candid critique of a company in terms of discussion in newsgroups about product quality, customer support and other risk and critical success factors.

(ii) Marketing sales and promotion

The interactive nature of the Internet makes it an excellent tool for gathering information and feedback about product market opportunities and potential new product ideas. Monitoring of the various discussion groups and corporate/product discussion groups can provide significant sales leads. Through the use of corporate FTP, Gopher or WWW server sites, a company can most effectively promote its products by disseminating timely corporate happenings, product announcements, recent strategic alliances and others of potential interest to existing and prospective customers. Continuous up-to-the-minute electronic publishing of virtually any type of marketing collateral materials, sales literature, owner's manuals, technical documents or time-sensitive information can all be easily made available via the Internet. Email can be used to allow customers to submit specific product questions and to request specific sales quotes. Real-time feedback can be obtained as site visitors fill out forms. This allows for instant up-to-date statistical reporting which can identify 'sweet spots' and help shape marketing strategy. All in all, the Internet promotes rapid and productive communication that can reduce the sales cycle significantly. It allows for 24-hour business communications which few businesses can offer customers.

(iii) Business contacts

Newsgroups provide an excellent place to meet people with related interests. The Financial Economic Network (FEN) 'for instance' formed about a year ago has become the largest electronic financial network in the world, linking people with scholarly and practical interests in business and economics.[5]

Subtle business-card exchanges are also taking place on the Internet. A contact which begins on a personal level may evolve over time into a business relationship.

(iv) Online employee recruiting

The Internet is increasingly becoming a promising area for employee recruiting. Online advertisement space may be secured via online recruiting organizations such as the Online Career Center Inc and Career Mosaic at rates cheaper than the traditional pay-by-the-inch classified advertisements. Companies may also post job openings through several USENET newsgroups such as 'misc.jobs.offered' with no middleman and no incurred cost.

(v) Research and development
There are many significant benefits of the Internet to the R & D of an organization. The Internet provides strong support for communication, coordination and collaboration among R & D teams. It also provides ready access to a wealth of expertise offering an abundance of online access to subject matter experts and knowledge sources. Worldwide expertise on various aspects of a firm's business development may be available via the numerous newsgroups on the Internet. However, it must be borne in mind that the value of the Internet is largely a function of the quality and relevance of its information content. Not all desired topics may be discussed. On the other hand, not all discussion groups have strict quality control over its content and information may be flawed, misleading, misinterpreted, of limited value or inaccurate.

(vi) Time-saving and cost-saving
Many daily operational chores such as frequent meetings, telephone conversations and report preparations could actually be speeded up with Internet use. For salespeople and field representatives who need to communicate and obtain information on the fly, there is a range of networking tools such as wireless modems to assist them in their jobs. The ability to communicate using email and distribute files in any format quickly and conveniently to anyone connected to the Internet or a select group allows for easy collaboration with colleagues.

The cost of entering WWW-presence business is low – an entrepreneur can start at home. In fact the electronic networks can enable entrepreneurs to start businesses without acquiring expensive physical assets. By opening up a 'store' on the Internet it is possible to engage in 'retailing without bricks and mortars or space leases'.[9] Substantial minimisation of a firm's printing and postage costs is possible because by paying a flat monthly fee a company can send as much email as it wants and wherever it wants. There is also no need to pay a substantial amount to rent a mailing list to reach potential customers or to pay for expensive advertising space in an industry magazine, as the Internet offers features that perform such tasks. To date the network appears to be especially significant for small businesses. According to Mary J. Cronin, professor of management at Boston College and author of 'Doing business on the Internet': 'The Internet ... put(s) small companies on the same playing field as large international companies. Small companies can look for customers overseas and across the nation. They can look much bigger than they are'.[8]

One of the easiest and least costly ways to open an online business is to become a tenant in one of the many 'cybermalls' that are springing up faster than was imagined. Companies that operate these electronic malls will sell you online space and help you design your own 'pages' to provide all the product and ordering information customers need. The cybermall companies will manage all the technical aspects and often do some marketing and advertising. This approach has, in fact, already benefitted business people who had little or even no knowledge of the online world but are able to take their existing service into cyberspace via a cybermall.

Issues of concern
Though online commerce looks promising there are a few barriers to full-scale adoption of the Internet as a venue for doing business.[5, 8, 10, 11]

(i) Security
By far the most serious concern is the security problem posed by dishonest hackers. Companies are understandably wary about sending purchase orders over unsecured computer networks and consumers hesitate to send their credit-card numbers.

Solomon[8] believes that some solutions should come fairly rapidly in two to five years' time. Several organizations such as CommerceNet are working on secure WWW software. Launched in April 1994 CommerceNet is a non-profit consortium in the United States formed to resolve some of the problems that have deterred companies from doing business on the Internet. CommerceNet is working to make online businesses easier and safer to run. It aims eventually to enable buyers and sellers to meet on the network and safely exchange sensitive information – such as credit card numbers, bid amounts and legally enforceable contracts – and have financial institutions transfer the funds.

(ii) Ease of establishing WWW presence
Establishing and maintaining a presence on the Internet is not as easy as it appears to be, especially for small businesses. However, in future, as enhanced software and good e-brochure design tools become available, many businesses will be able to create their WWW presence without assistance. Shopping malls could establish their own WWW home pages which would contain general information and pointers to home pages of individual stores. Store personnel may be trained to create and maintain their store home pages. The large firms will most certainly have home pages.

(iii) Visibility on the Internet
Another concern for companies intending to conduct business on the Internet is the difficulty of being seen. One solution to this problem of distinguishing a company's home page from millions of others is to locate it at a popular place in cyberspace. Mecklermedia Corp. hopes that MecklerWeb will become such a spot. Currently it is selling its services to Fortune 1000 clients with commercial interests in

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the various domains such as art, technology, law, medicine and so on which it has created in its home page for an annual charge of US$25,000. Press[12] believes that if millions visit the MecklerWeb daily or if a company gets a few highly qualified prospects, the current annual fee of US$25,000 is a terrific bargain.

Another outstanding site is that of the O'Reilly Associates' Global Network Navigator (GNN). Voted 'best commercial home page' at the first International WWW conference in May 1994, it has an extensive travel centre besides covering many other topics. Eventually if the GNN travel centre becomes *the* place to visit when planning a trip, it would not be inconceivable at all that hotels airlines and tour companies will want pointers to their WWW home pages there.

There are also other major online services such as America Online and CompuServe, which provide shopping services on the Internet. These services don't come cheap but they provide hundreds of screens, graphics, online advertising and technical support including mechanisms for electronic payment. They also limit the number of cybermerchants in any one category, so you don't have to worry about being one of many online florists, for instance, vying for business.

Local firms on the Net

A number of companies based in Singapore have, in fact, expanded their marketing strategies into cyberspace.[13, 14] Singapore Press Holdings' *Business Times,* thanks to a well-established electronic publishing division in-house, has become the first Asian business newspaper to open an Internet home page. The online version of *Business Times* is available at noon each day and carries virtually all the Asian news in the paper. The Singapore Tourist Promotion Board is offering travel planning services on the Internet. Reed Exhibitions Pte Ltd offers virtual tours of trade shows, CYC Shirts offers customized shirts and ANA Hotel in Nassim Hill offers hotel reservations through their Web pages. In all more than 40 local companies, including the Overseas Union Bank, Singapore Technologies and Chan Brothers have made their appearance on the Web in the past year.

According to Reed, which was one of the first companies in Singapore to go on the Internet when it subscribed to the Asia Online service in September 1994, more than 2000 users worldwide browse its home page on the World Wide Web each month generating more than 50 per cent of all new contacts. Most firms, however, say that it is difficult at the moment to gauge how going on the Web has helped their business. Nevertheless the potential of the Net as a very cost-effective way of reaching clients is widely acknowledged.

For companies which do not have the necessary technical capabilities in-house, there is available an increasing number of local service providers offering Web publishing services. SilkRoute, for instance, is one of the pioneers on the Web publishing scene in Singapore and has done work for companies like Singapore Tourist Promotion Board and electronics giant Grundig. For a list of some local Web sites (and companies) offering Web publishing services please refer to Appendix I.

Conclusion

Despite some of the problems and shortcomings facing online commerce, the Internet has come of age in the commercial realm. With the millions of users already connected to it, the Internet has quickly become an established method for connecting suppliers and customers worldwide within a very short time since the network was first officially opened to commercial activities in 1991. According to Angell and Heslop.[2] more than 38 million people are now connected to the Internet, and an estimated 100 million people will be connected by 1998. There is therefore no overstating the vast potential for business enterprise on the Internet.

The benefits of using the Internet to conduct business, or rather in most cases to supplement an existing business, are many. The Internet offers great opportunities to improve business productivity and opens up new untapped markets on a global scale. Technology-oriented companies are already successfully using the Internet as a source of market research as a means to communicate with employees in-house and off-site, to interact with current customers, to reach new customers and to associate with others with common business interests[19]. Companies considering the Internet should, however, first determine what they want Internet access to help achieve, whether it be reducing courier and fax charges, exchanging electronic mail with clients or setting up a new sales and marketing channel. They can then decide how one or more of the key Internet tools can be used to make it work for their business. It must also be borne in mind that a more sophisticated approach to online commerce would also require more substantial investment in planning as well as investment in time and effort.

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WEBSITES

America Online
http://www.aol.com/

Career Mosaic
http://www.careermosaic.com

CommerceNet
http://www.commerce.net/

CompuServe
http://www.compuserve.com

Financial Economics Network
http://www.ssep.com/ssep/ssephome.html

Global Network Navigator
http://nearnet.gnn.com/

MecklerWeb
http://www.mecklerweb.com/demo.html

Online Career Center Inc.
http://www.occ.com

APPENDIX I

Local websites (and companies) offering Web publishing in Singapore

Asia Online (SilkRoute Ventures Pte Ltd)
http://www.asia-online.com/

Asia Trade (Asia Internet Online Publishing Pte Ltd)
http://www.asiatrade.com/

Asian Connection (Singapore Network Services)
http://www.asianconnect.com/

CommerceAsia (Singapore Telecom)
http://www.commerceasia.com/

Singapore Online (Accel Infotech Pte Ltd)
http://www.singapore.com/

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EVALUATION OF BBC SCOTLAND LIBRARY SERVICES

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SHARED HUMAN RESOURCES IN ACADEMIC LIBRARIES IN NIGERIA

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BLAISE-LINE: enigma, anomaly or anachronism?

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Abstract

BLAISE-LINE provides online access to all of the British Library's major catalogues. It provides access to other major bibliographies as well, notably those of the Library of Congress and Whitaker (British Books in Print). Altogether it boasts 21 files, all of a bibliographic nature, and some 15 million records. Nevertheless, it is a pigmy amongst the online giants. BLAISE-LINE represents the very essence of the traditional library oriented online service, what with its MARC records, Dewey numbers and Library of Congress headings. This together with its raw command driven interface makes it very much the dinosaur of the online world. A survey was conducted to see what its users thought of it and whether it has much of a future in the bright, brash world of the Internet. The findings showed that its target audience – professional librarians – use it extensively for a whole range of routine library tasks and have few complaints to make about it. They used it quite differently to other online hosts. Efficiency and not user-friendliness was uppermost in their minds – and BLAISE scored highly on the former.

BLAISE-LINE is the British Library's Automated Service, best known for its array of British Library online catalogues and bibliographies, of which the *British Library Catalogue* and the *British National Bibliography* are probably the best known. Of all the online hosts, BLAISE-LINE is very much the odd one out. For a start, it is one of the few government-owned hosts in a sea of commercial services. Secondly, it is probably the smallest of them all – in terms of users (it has around a thousand – compared to Dialog's 0,000+), database numbers (a few dozen files as compared to Dialog's hundreds) and record numbers (1 million plus). Thirdly, bucking the full-text trend it is strictly bibliographic. You would be very lucky to get a pithy abstract from it – only one of its files comes with abstracts (The Department of Environment database). Together with OCLC, it is one of the the world's few purely bibliographic hosts. Fourthly, it is plain old fashioned – redolent of times gone by. The screen layout, the online messages, the record structure and the indexing (Library of Congress, Dewey, and PRECIS – though the latter is no longer used) are all located firmly in the days when librarianship was dominated by cataloguing and classification. BLAISE is an intermediaries tool *par excellence;* further removed from Netscape and the World Wide Web you cannot be.

But is it the dinosaur it seems? Is there a place today for such a raw, niche service, toiling along with software not much changed from the mid-seventies? Well, after all, it survives, in a very aggressive market place, where even the mighty have taken knocks. (TEXTLINE and Data-Star are cases in mind.) Despite its traditional and old-fashioned trappings, BLAISE is not as backward as it might initially appear. Thus it offers probably the best controlled language searching around (but even that is perhaps old fashioned these days?). It offers a veritable feast of controlled languages – Library of Congress Subject headings, COMPAS, PRECIS, name as a subject, place as a subject and then the much neglected search facilities of Dewey and Library of Congress class numbers (the former in full or truncated form). And it is not just subject that benefits from this control; all access points are highly controlled, coded and standardized. With many systems even humble author searching can be a nightmare, because there are so many variant forms of the author's name on the system – you will not find these problems on BLAISE. The system provides you with the confidence of knowing that if it says nothing is there, it is genuinely not there – it is not simply a case of you having failed to spot and adopt all the variant forms. BLAISE also offers a much maligned and misunderstood form of searching – *string searching,* a form of searching which opens the entire record to searches. Thus through *string searching* it is possible to search on page length, illustration, price, or whether the item is a CIP record or not. BLAISE probably provides more access points to the searcher than any other system, as long as the searcher knows what he or she is doing, of course: controlled languages, MARC records and *string searching* are not things for the novice or faint hearted. *String searching* provides countless opportunities for bibliometric analysis, too.

Aims and methods

Trying to obtain answers to the questions posed above is not easy, for very little has been written about BLAISE, and really nothing in the way of research has been conducted for many years now. The literature that exists is very dated and is either connected with its introduction[1] or its subsequent (controversial) division into two services – BLAISE-LINE and BLAISE-LINK, which became the host for BLAISE's biomedical files[2]. Probably, the article of most substance was that published by Bishop and Lewis[3], which summarized the findings of a market research report commissioned by the British Library. As with much of the writing at the time it concerned itself largely with the merits of hard copy versus online searching. Of all the host systems BLAISE is undoubtedly the most neglected by the information profession, and that is most interesting, for it, more than any other system, was designed for librarians. Today the profession is looking elsewhere – to the end-user, full-text, CD-ROM and the Internet: BLAISE is simply dull fare. The scribes have moved on to more interesting and fashionable pastures – to the detriment of us all, as we hope to demonstrate in this article.

Given the paucity of the literature and the many important questions that remained unanswered it was decided to undertake a survey of BLAISE users. To make the study more manageable, it was decided to concentrate solely on the flagship service – BLAISE-LINE (for economy referred to simply as BLAISE from now on). No study could be conducted without the Host's help for they were the custodians of the customer database, from which we needed to sample. This was freely given, though there was a small price to pay – BLAISE-LINE staff had a list of questions they would like to ask of their users; and they also had valuable views on our questions too. For reasons of customer confidentiality BLAISE themselves distributed the questionnaires – 70 were sent in all. The sample was not wholly representative however for: (1) BLAISE chose users whom they felt would be more likely to respond (this would, possibly, lead to a more favourable response); (2) overseas subscribers were slightly over represented – BLAISE has had little feedback from these users in the past (they actually constitute a quarter of all users).

Results

Characteristics of the responding libraries

Thirty seven questionnaires were returned, representing a response rate of 53%. It was gratifying that over half of the questionnaires were returned, but given the slight bias in the sample towards the co-operative users and the wholesale neglect of the service in the literature, it was a little disappointing. Special libraries proved to be the most responsive, returning nearly three quarters of their questionnaires, and national libraries the least responsive, returning none of theirs. Most of the respondents were mature online users: they had been using online for some time – typically over seven years, and all had access to at least one other host. Typically this other host was Dialog, with over 80% of responding libraries having access to it. FT Profile was the next most popular online service, with over half the libraries subscribing to it as well as BLAISE. The only other host of note was ESA-IRS, with just less than half of BLAISE users subscribing to it. This confirms what was probably suspected, that BLAISE is not a stand alone system, but a niche and complementary service. It is but one of an array of services libraries need to provide them with online cover for all their various activities.

Online can be a relatively expensive searching medium, although by comparison with other hosts, BLAISE is relatively inexpensive, with an hourly connect charge of £12 an hour. The display charge of 45p per record can bump up search costs considerably, although by judicious use of the free display facility (the browse format) this cost can be kept down. This perhaps explains why a large proportion (37%) of its subscribers have total online budgets of £5,000 or less. They obviously have to be thrifty and BLAISE offers value for money. However, BLAISE appeals to the rich and poor alike for some 20% of its users have annual budgets in excess of £25,000.

Users and uses

Surprising no one who has used BLAISE regularly, none of the institutions surveyed made BLAISE available to end-users. BLAISE remains very much part of the information professional's bibliographic apparatus. Whether it can continue to get a decent economic return in such a small marketplace remains to be seen, but virtually every other host of note, even those bibliographically oriented ones, like DataStar, has seen fit to chase the elusive, but allegedly profitable, end-user. While libraries did not provide end-user access to BLAISE they sometimes did to their other services – 14% of respondents offered end-user searching facilities to other host systems, most notably FT PROFILE.

Amongst information professionals BLAISE appears to appeal to all groups of library staff, though it is inter library loans and inquiry staff who are its biggest users: 73% of respondents indicated that the former group used it and 68% the latter group. Cataloguers and acquisition staff used BLAISE equally – nearly a third of respondents identified these departments as being BLAISE users. BLAISE thus underpins many key library functions – and not just the strictly technical ones. It follows that the principal uses to which respondents put BLAISE was: bibliographical checking (81%of libraries said they used it for this purpose) – surely something that will never go out of favour in libraries; answering subject enquiries (65%); and obtaining interlibrary loans (62%). Interestingly, the Bishop and Lewis[3] study, the only comparable piece of research, found that bibliographic checking was only a minor function to which BLAISE was put. Can it be that the considerable file additions that have occurred since publication of their study has raised its bibliographic checking value? When compared to other online hosts BLAISE is used quite differently. Respondents used the other hosts less for bibliographic checking (something which is obvious in full-text PROFILE's case) and more for subject searches. Inevitably, tied to library collections as it is, BLAISE is used far more for inter library loans. No real surprises here, just confirmation of what we already knew.

Frequency of use

Given that BLAISE is so central to the basic functions of most libraries, it comes as no surprise to discover that most libraries search it on a daily basis – 54% did so. More evidence that BLAISE is an essential part of library routine comes from the finding that just 8% of respondents used the service less frequently than once a week. BLAISE is probably unusual in this: you would expect use of most other online services to be heavy but not so frequent, because they are not tied so closely to the routines of actually running and maintaining a library. Indeed, of all the online services used by the respondents BLAISE was used the most frequently. Of all the library types, special libraries used the service most frequently, no doubt a function of their bigger purses. For probably the very opposite reason public libraries used BLAISE least frequently. Happily for the British Library, 38% of BLAISE users foresaw that their usage would increase in the future; most of these optimists came from academic libraries. Furthermore, it was felt that a number of inducements would bring increased use in their wake: notably, a more user-friendly interface, additional files and more free training facilities (all three incentives were equal in popularity). There was just one factor that was cited as a threat to higher levels of usage – and that was the increased availability of CD-ROMs (35% of respondents mentioned this as the primary threat).

Ease of use

Despite its complicated field structure, raw interface, multitude of access points and limited online help facilities, the overwhelming proportion of users (89%) thought BLAISE easy to search! A rawer command-driven system you could not get, but that appears to be no obstacle to intermediary searching. Indeed, with an information system world full of windows, mice and menus, information professionals welcome BLAISE with open arms. It offers genuine respite from end-user paraphernalia. This reinforces something that the senior author has observed when he trains library school students: that despite having been shown the delights of full-text FT Profile, which they learn too, it is to BLAISE-LINE that they give their hearts. Encapsulating cataloguing, indexing and bibliographic searching as it does they feel it draws together much of what they know and like – and, just maybe, they feel it is one bastion that the end-users (the bogy of all student librarians) will not scale. Respondents obviously feel that way too, for a majority of them felt that BLAISE was easier or much easier to use than other hosts (FT Profile included). Undoubtedly, when they answered this question, respondents were not simply thinking about how little they had to learn before they could get anything out of the system (Profile with its half-dozen or so features scores hands down here), but how effective it was to search once you had grasped its intricacies. Of the main library groups special libraries were most split over how easy BLAISE was to use. Given that they were the most frequent online users this might have proved surprising, but as they were also the libraries most likely to use FT Profile – an end-user system *par excellence,* perhaps, that influenced their thinking.

Problems in using the system

Despite its claimed ease of use some respondents had difficulties with the system – largely, but not solely, the ones who said they found it difficult to use. In all, a third of respondents experienced some problem or other. The problems cited varied widely – there was really no central or overall problem. Those attracting more than one comment were: the number of commands (too many); the inability of the searching software to deal with searches that found large numbers of hits; *string searching* – with retroactive notation probably one of the most difficult concepts to explain to library school students, although the British Library have since introduced some improvements here. There were suggestions too, for improvement. Indeed, two respondents were so bold as to suggest that a Windows type interface might prove the answer. Less contentiously, a suggestion was made in regard to an improved multi-file searching facility – the present one is so camouflaged by jargon and codes it defies explanation even to regular and seasoned users.

Cost issues

Questions were asked both about the means of payment (standing, connect and display charges) and about value for money. There were few criticisms of the former with 81% of respondents saying that the BLAISE system of payment was as good as that for other online hosts. Academic libraries were the most unhappy, with 30% saying that BLAISE's method was worse than that of the other hosts. This might well be because of the special discounted rates that some hosts, like Dialog, offer to select academic institutions. In terms of value for money BLAISE comes out very well too. As many as 72% said that BLAISE was good or very good value for money. Public libraries found it to be most expensive – indeed, amongst this group could be found the only libraries that though BLAISE *very* expensive.

Training and support

A raw command-driven system like BLAISE is dependent upon both training and (copious) documentation for itş effective use. Therefore, questions about users' satisfaction with training and documentation assume special importance. A BLAISE subscription brings with it a set of documents: a manual, a mini-manual (which is the size of most hosts' normal size manuals – deemed necessary by the thousand page or so main manual) and a quick reference guide. Virtually all respondents said that they had a copy of the manual, four-fifths the mini-manual and, surprisingly – but then it probably walks because of its size – only 70% had the quick reference guide. Interestingly – and by way of comparison – a study conducted by one of the authors on journalists did not identify even one journalist (among 80) as having even PROFILE's quick reference guide[4]. However, although the manual was the most widely available of all BLAISE documents and generally highly praised for its helpfulness, it was not the most heavily used; that place went to the quick reference guide – 30% of librarians used it at least once a week: in contrast 90% of librarians said they used the main manual less frequently than once a week or never at all. Compared to the documentation of other hosts BLAISE did not score so well: two thirds of respondents felt that other hosts offered better documentation. While a much improved product, nevertheless, much of the documentation still looks very civil-service in nature.

Despite the fact that the BLAISE set of documents is an intensive training course in itself, just under half (49%) of respondents thought it fit to attend a BLAISE training course. Training was most popular amongst the less regular users of the system – the public librarians, and least popular amongst the regular users – the special librarians. Training in these circumstances is obviouly used to compensate for lack of practice. Opinions amongst those attending the courses were favourable: they were universally found to be helpful and most respondents (80%) found them to be good value for money (£100 per person). More respondents went on BLAISE training courses than on training courses for the other hosts they subscribed to – this can be partly attributed to the method of sampling, but it also points to the relative complexity of the system.

Conclusions

Essentially the survey paints a picture of a small, content and very active user group. This group is wholly professional in character. Despite being long in the tooth BLAISE-LINE stands up surprisingly well to the scrutiny of its seasoned users. For intermediaries BLAISE carries out many of the bread and butter functions of librarianship efficiently and effectively. This is a service tied into daily work routines. Given the nature of the user group it should not be unexpected that vast manuals are tolerated and, indeed, liked (a comfort blanket perhaps?) and that training should be so highly rated by so many. This survey provides a useful antidote to the many studies praising user-friendly, menu-driven systems. Ease of searching is not synonymous with user-friendly interfaces – there is much more to it than that. A system is only user-friendly if it delivers the goods and that BLAISE-LINE patently does for its users, but it by no means deserves – or would wish for – the epithet user-friendly. At any rate user-friendly is a relative term – there is no reason why a system for intermediaries cannot be user friendly. Why should we not expect to invest time and effort in understanding a system if we wish to get a lot out of it? As someone once said you get nothing for nothing – and that is something Internet and CD-ROM users are just beginning to understand. Alleged user-friendliness is no substitute for good training – although increasingly this is being thought to be the case.

Despite its happy band of users and the intention of a good proportion of them to increase their use of the system, it can be by no means certain that BLAISE, with its small number of files and highly processed and expensive-to-produce data, will survive the economic rigours of the market place. Is there not a danger that it will be squeezed between the supermarket hosts, with their legions of end-users, one-stop full-text files and American market; the Internet, with all its freebies (library OPACS and national library catalogues – the Library of Congress catalogue is there) and the products of a rampantly enterprising Bookdata (TES Bookfind, in particular, with its book reviews and content pages)?. The situation looked surprisingly good for BLAISE when the study was conducted – early 1995, but events are rapidly unfolding and perhaps the future is not so rosy now. The move to extend coverage to the periodical literature in the shape of the DOE file is undoubtedly a good one – BLAISE, like the libraries it serves, surely cannot survive on the monograph alone. Also, there is a need to restore the subject authority of its indexing (COMPAS is a poor substitute for PRECIS). And maybe, just maybe, they can draw in the end-user, not by simplifying the system (through Windows or the like), but by highlighting its document delivery role, and in the process making document ordering a more transparent and far less bureaucratic and library-oriented task. Given an automatic, speedy and economic document delivery system in support, bibliographic hosts, like BLAISE, still have much to offer and need not inevitably concede ground to their full-text competitors. There are good grounds for believing that an online search facility combined with a full-text fax or postal document delivery service might prove to be the most economic/effective information system model. After all not everybody needs their information straightaway.

Finally, then, in answer to the question set at the outset, yes, BLAISE-LINE does stand out starkly from the competition but that is by no means a bad thing – as its seemingly devoted user group would unanimously confirm. Yes, it would be regarded as a dinosaur by people who did not understand the innermost workings of the information profession, but amongst this latter group BLAISE has a strategic role to play; and nothing is likely to change that – providing the British Library does not shoot itself in the foot.

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Evaluation of BBC Scotland Library Services

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Abstract
A survey was carried out of users, and potential users of the BBC Scotland Information Research Library services. Two postal questionnaires were sent out in the summer of 1995 to more than 100 individuals and organisations in Scotland. Based upon a 50% response rate, various conclusions could be drawn. Internal respondents were very satisfied with the services they currently received, but were, unsurprisingly, unwilling to pay significant sums to receive the services. There is some potential interest from outside the BBC in the Library's Events Guide. The exercise was undertaken both to assess the potential market for the Events Guide and to raise awareness generally of the Library's services. The results provide valuable pointers to how the BBC Scotland library services can develop, and, in time, the survey may turn out to have been a valuable marketing tool in its own right.

Introduction

The BBC has operated under a Royal Charter for over the last seventy years providing both television and radio broadcasting to the UK, and other countries through its World Service. In April 1993, the BBC introduced a new policy called 'Producer Choice'. This is effectively an internal market, and enables BBC staff to choose from whom they want to buy services. Those who sell their services internally are expected to cover their costs and overheads. This is the situation in which the Library Services operate. They must recover all its costs including paying per square foot for office space and heating costs. The objectives of Producer Choice were: firstly to provide true total costs of individual programmes; secondly, to give resource providers greater managerial freedom to provide an efficient, quality service at a good price, and thirdly, to make programme makers free to work with facilities of their choice[1]. Each production department entered into negotiations with the Library Services department. They agreed a contract and a fee depending on the amount of use they make of the Library Services facilities. Contracts with production departments are based on the Library Services department as a whole and not with individual libraries.

BBC Scotland

The BBC's Library Services in Scotland consist of a network of information units serving programme needs throughout Scotland and is based at BBC Glasgow. All BBC Scotland staff have access to these Library Services. BBC Scotland's main offices are in Aberdeen, Glasgow, Edinburgh, Inverness and Dundee; there are also a number of small out stations. Payment is through the radio and television management that is based in Glasgow.

Besides the Glasgow based services, there are unstaffed library collections at Aberdeen, Edinburgh, Inverness, Stornoway and at five BBC radio stations in the country. All BBC Scotland staff have access to the Glasgow based Library Services. However, the Library Services department only provides library collections and staff for the Glasgow office; other offices or out stations have collections of programme tapes, music and reference books that they can use. The most important units that make up the Library Services department are: Bi-Media Library, Gramophone and Music Library, Scottish Records Centre and the Information Research Library. These are described below.

The Bi-Media Library was formed in 1993, and combines the TV Programmes Library and Radio Programmes Library. Its holdings include 'current' recordings of BBC Scotland, that is up to five years old, and archives of Radio Scotland dating from the 1940s. There is a collection of some of the Network Radio programmes made by Radio Scotland producers; the remainder are held in London. Sound effects are available on both CD and vinyl disc. BBC Scotland TV programmes are available from 1958 on film and videotape. This covers both network and programmes that only appear on regional Scottish BBC. TV News material is held on videotape from 1983. In addition, there is a collection of TV stock shots and books and magazines on TV and film techniques. Services provided by the Bi-Media Library include subject information about transmission material, access to the Sound Archive in London, access to a network of television libraries, and information on broadcast formats. The Bi-Media deals with enquiries and provides viewing and listening facilities for users.

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The Gramophone and Music Library holds both recorded music and printed music. The recorded music collection consists of commercial and non-commercial music recordings on CD and vinyl disc as well as discographies and commercial music magazines. CDs are arranged by disc number and artist and track information is obtained from the catalogue. There is also a large collection of 'All broadcast rights' CDs. These are designed by music publishers for media applications. LPs are arranged in categories ranging from Country & Western to Classical, Gaelic, and Jazz and Pop. Singles are arranged by the name of the artist. In addition, there is a BBC Scotland artist and title card catalogue, and access to the BBC London Gramophone Library catalogues and holdings. The printed music collection consists of performance and control material for broadcasting based on the Scottish Symphony Orchestra. There is also a limited collection of collected works of chamber music and songs, vocal scores, choral and keyboard music. Original BBC Scotland commissions and music reference works are also included. The BBC Central Music Library Catalogues are used to find the relevant piece of music. They are divided into the various sections of orchestral (composer and title), songs (composer), chamber: solo instrument (composer), brass band (composer), choral (composer and title), piano & organ (composer), and chamber groups (composer). The Gramophone and Music Library provides advice on choice and availability of recorded music, record cleaning facilities and recorded and printed music information. Other services include listening and viewing facilities.

The Scottish Records Centre is a storage and retrieval service for BBC Scotland core programme information. Core programmes are: BBC Scotland Radio and TV Programmes-as-Broadcast (P-as-B); BBC Scotland Radio and TV Scripts; and Programme contracts. At present, the library holds BBC Scotland Radio P-as-B material dating back to 1964 with older material available from the Written Archives Centre in Reading. They hold BBC Scotland TV P-as-B material from 1957. The Centre also stores programme files of BBC Scotland Radio and TV up to eight years from transmission and scripts of BBC Scotland Radio and TV programmes. Catalogues of programme titles, subject indexes up to 1983, contributor indexes up to 1977 and script indexes enable users to find information. Services provided by the Centre include secure storage for programme files, information to help with rights clearance for repeats or programme sales as well as information concerning notable BBC Scotland broadcasting dates.

The Information Research Library

The Information Research Library provides an enquiry and information service. This combines a news cutting service, general research service and events information. The library's printed sources include press cuttings consisting of over 12,000 subject files on mainly Scottish subjects and personalities, and date back to early 1970s. In addition, they hold the previous year's Scottish daily, and Scottish and UK Sunday, papers as well as the last three months' UK daily papers. Other printed sources include standard reference library sources. There is a small collection of books with a Scottish bias available for loan; the library produces a new book list. The library receives about eighty magazines that are available for circulation and produces a bi-monthly *Events Guide*. This provides dates and locations of conferences, exhibitions, festivals and press launches up to one year in advance. It is available by request only, and is taken by a number of producers and researchers. Online sources include FT Profile and the newspaper databases of *The Herald* and *Evening Times*, two Glasgow based newspapers. The library has various reference works in CD-ROM format, and has recently gained access to the Internet. Material can be located using the catalogue of local book holdings, the catalogue of the BBC London Reference Library and the fascinating Scottish Murders Database. Services include general fact checks, Inter-Library Loans, and book orders. The Library is run by three staff. One devotes two-thirds of her time to Information Research with the remaining third being devoted to the Bi-Media Library.

Financial pressure within the whole of the BBC has led to reduction in budgets in production departments. This in turn has led to decreasing morale within the Library Services department, although the staff are valued and enjoy their work. If production departments cut their costs, Library Services have to cut their own costs. The Library Services is a valued department that performs well. It is core to the BBC actions and adds quality to programmes. Therefore, the Head of the department, Alexandra Gaffney, was keen to investigate the effectiveness of her department, beginning with the Information Research Library. This paper reports the results of an investigation into the perceived value of the Library and its services.

At present, the marketing of the Information Research Library and the Library Services department is carried out in an *ad hoc* manner. All members of staff within the BBC receive a Manager's Induction Briefing and there is also an induction programme for new members of staff in the Resources department. In addition, staff receive notes concerning the Library Services department as part of their information pack on the BBC system as a whole. The Library Services department has also produced some factsheets explaining the holdings and services of its various libraries. It issues a *Post-Production Facilities Newsletter* for internal customers. In addition, it has created some displays using photographs from the archives to help advertise itself within BBC Scotland. Finally, the Library Service department is part of Resources Scotland, which places adverts in the independent media guide, *Filmbang*.

Marketing in libraries

Norman[2, 3], Tuffield[4] and Keane[5] all provide detailed reviews of the literature of library marketing. Norman's first review comprised 75 journal articles in 39 periodicals and his second 90 references to journal article in 49 periodicals. This demonstrates the increasing importance of marketing in the field. Norman's second review contains sections on trends and developments, marketing research and surveys. Each section summarizes the current situation and highlights the influential authors. Tuffield's annotated bibliography was written with the aim of demonstrating the range and type of material regarding marketing management and how this can help library managers determine client needs and provide comments on library services and products. It recommends 67 articles suitable for information professionals with little or no formal marketing training. Tuffield believes that marketing has developed from a publicity only to an overall management tool.

Keane examined a selection of library marketing literature considering current marketing theories and makes use of Norman's bibliographies. She discussed the compatibility and comparability of the functions of marketing and librarianship, the use librarians have made of marketing techniques and if the growth of marketing theory parallels with the growth of librarianship theory. Keane supports the view that marketing and librarianship have comparable aims, i.e. the customer is the most important element. She also claimed that librarians are using marketing techniques, even if they do not always recognize the marketing terminology. She stated that one of the major benefits of adopting marketing is that it requires librarians to make explicit rather than implicit decisions such as developing mission statements and organizational goals and objectives.

The library and information science literature is full of articles and monographs on marketing. Good examples can be found in[6-18].

Media libraries

Media libraries can be defined as libraries serving the broadcasting and newspaper industries. Eagle's[19] book and articles such as those by Verguson[20] and Medhurst[21]provide a good introduction to broadcasting libraries and their differences from public and academic libraries. These provide descriptions of the daily work and problems faced by such libraries. Lee[22] recommended specific training for media librarians because of the special nature of the work. Chepesiuk[23] described work in the US based CNN (Cable News Network) Library. The library has only recruited professionally qualified librarians. Van Arkadie[24] described the pressures of speed and accuracy on staff of the BBC Information Research Unit in London when serving the BBC World Service. Van Arkadie explained how the librarians try to cope with these constant pressures such as having to answer enquiries within fifteen minutes so the answer can be included in a broadcast immediately. Stoker[25] dealt with the recent developments in the field of UK media librarianship. He stated:

'providing an information service for journalists and programme-makers [is] probably one of the most interesting, demanding, and yet under-rated and under-rewarded jobs in the field of library and information work.'

The discrepancies in payment for media librarians exist because, until recently, the work was mainly manual and labour intensive and thus costly. Few staff in the UK, though, have professional qualifications because it is felt that standard courses in the field do not cover the needs of media librarianship sufficiently. Staff tend to be trained in house and to remain with the library for long periods of time. In addition, media library staff tended not to interact with other librarians. However, the situation has altered recently with the introduction of automation, full-text news databases and CD-ROMs. This has greatly reduced the need to cut newspapers, and the staff are now able to deal with more complex enquiries and allows journalists and researchers to access the database themselves. David Nicholas has written extensively on the topic of journalists' use of full text online databases. General issues of relevance to media libraries can be found in*Deadline*, the Newsletter of the Association of UK Media Librarians.

Methodology

We were approached by BBC Scotland's Information Research Library to undertake a survey of user satisfaction and potential for development of the library's services. At present, the Library Services department has to recover its costs. The purpose of the project was to examine the interest in and sales potential of the Information Research Library to both internal BBC customers and outside bodies. Two postal questionnaires, one for internal (BBC) and one for external users or potential users, were designed. The internal questionnaire dealt with respondents' usage of the library and its services: press cuttings, online search services, staffs researching skills. Staff friendliness, efficiency and respondent's satisfaction with enquiries were also assessed. The *Events Guide* was assessed by the criteria of usage, ease of use, time scale, cost and delivery format. Respondent' usage of other sources to satisfy enquiries was examined, and they were given the opportunity to suggest any changes they would like in the services of the Information Research Library. External respondents were sent a sample copy of the *Events Guide* to give them a feel for the format and the sort of topics covered. The questionnaire examined the *Events Guide* and its coverage, time scale and cost. Respondents were asked which, if any of the services provided by the Information Research Library would be of interest to them, and how much they would be willing to pay for access to them.

The targets to receive the questionnaires were selected by BBC Scotland, and comprised 69 internal names and 32 external names, 101 in total. The internal respondents were BBC employees based at Aberdeen, Edinburgh, Glasgow, Inverness and Stornoway. The external list consisted of a selection of radio stations, television production companies, newspaper companies and other bodies. The questionnaires were sent out in July 1995. Follow-up on the telephone was made to external customers. Some requested another copy of the questionnaire to be sent out and some stated that they had received the questionnaire but would be declining to complete it, due to lack of interest in the service, or time constraints.

The aim of the questionnaire was to assess both the size of the potential market and make the market aware of the services potentially available to them. Fifty questionnaires were returned, a return rate of 49.5%. Eight respondents completed in full and 42 respondents provided partial completion. 'Partial completion' means, of course, questionnaires that had one or more questions unanswered. In some instances, respondents made more than one selection from a choice of responses, and where this happened, both answers were counted.

Twelve of the 32 (37.5%) external respondents replied, and 38 of the 69 (55.1%) internal respondents replied.

Results

As has been noted, 50 questionnaires were returned by the deadline. It should be noted that in one case, two different members of internal staff photocopied, completed and then returned the same questionnaire. Both questionnaires contained different answers and the results of both questionnaires have been used. In effect, this makes the total number of questionnaires sent out 102, with 50 returned and 52 not returned.

It has already been noted that the majority of returned questionnaires were only partially completed. Various factors may have caused this. In the external questionnaire, these will include a lack of understanding of some of the terms describing the services of the Information Research Library, for example one respondent who put question marks when asked to estimate the amount of use they would make of the Information Research Library services. In the case of the internal questionnaires, candidates appear to have only answered questions directly relevant to their usage. For example, one respondent omitted to reply to questions referring to usage of reference texts, online services and the research staff, after stating that he or she used the Information Research Library less than once a month.

A variety of reasons may also explain why candidates made no reply. Firstly, the questionnaires were sent out during the holiday period. In addition, potential respondents may have simply had other work pressures or may not have been interested in the services on offer.

A primary interest of the library was to assess the potential for selling the *Events Guide* outside the BBC. Both sets of questionnaires dealt with the *Events Guide* and can be compared, as the external respondents were provided with a sample and therefore should have been able to understand the product. At present, the *Guide* is only sent to BBC staff. Respondents were questioned about the time scale they would like the guide to cover, the cost and the delivery format. In addition, internal respondents were questioned regarding how often they used the guide, how useful it is, and its ease of use. Twelve of the external respondents answered a question if they required information regarding future events. Eleven of the twelve respondents answered yes and one answered no. They were also asked if the *Events Guide* would be useful to them. Eleven of the twelve respondents answered yes and one answered no.

Both external and internal respondents were questioned on what time scale they would prefer the *Events Guide* to cover. At present, the *Events Guide* is issued every two months and divided into monthly sections up to one year in advance. It provides dates and locations of conferences, exhibitions, festivals and press launches on a monthly and annual basis. Forty-three respondents answered this question. Of these, 16% selected 1-2 months, 32.5% selected 3-4 months, 25.5% selected 6-8 months, 12% selected the 12 months option and 14% selected the 18 months. This demonstrates that the 3-4 month option was the most popular. However, support for the 6-8 month option was strong as well which suggests that perhaps a compromise of issuing the *Events Guide* every three months or six months might be more popular. None of the external respondents wanted the *Events Guide* issued any less than 6-8 months at the maximum. Five external respondents would have accepted the *Events Guide* being issued every 12 months and six other external respondents would have accepted it, every 18 months. Although, the questionnaires contained no comments to suggest this, respondents may have been uncertain whether they were being asked if they would like the *Events Guide* to be issued every 1-2 months, or whether they wanted it to only cover events 1-2 months in advance, in contrast to the up to one year in advance that is the present limit.

Both external and internal respondents were questioned on how much they would be willing to pay for the *Events Guide*. Their answer was to be based on an annual subscription of six issues. The options ranged from £0-90, £91-180, £181-270, £271-360 and £361-450. Forty respondents answered this question. Thirty-six, i.e. 90%, selected the cheapest option, 7.5 % selected the £91-180 option and 2.5% selected the £181-270 option. This clearly demonstrates that offering a wider range of price options at the lower end of the scale would have been useful, e.g. the options £0-£30, £31-60, and £61-80.

All respondents were also asked about delivery formats which could be used to deliver the *Events Guide* to them. Respondents were asked to tick yes or no beside the four delivery formats suggested, i.e. email, floppy disc, CD-ROM and online services, thus allowing respondents to express an interest in more than one format. Fourteen respondents expressed an interest in email delivery, 19 in floppy disc delivery, nine respondents in CD-ROM delivery and 19 in online delivery.

The question following asked if respondents had a PC and modem. A PC is required for all the delivery options, but a modem is also required for online services and email if communication is required outside a local area network. Nine external and 15 internal respondents answered yes to the question. Two external and 22 internal respondents answered no.

Another priority for the library was to assess current user satisfaction with their services. Thirty-five of the 38 internal respondents who completed and returned their questionnaires answered this question. They were asked how often they used the Information Research Library and to choose their response from the options: never, once a month, once a week, several times a week and daily. The results demonstrate that the majority of the thirty-five respondents make regular use of the Information Research Library. Turning to the courtesy and helpfulness of the staff, with the exception of one respondent, the results clearly demonstrate that the internal respondents of BBC Scotland are very pleased with the library staff.

The internal respondents were also asked to rate the efficiency of the staff of the Information Research Library. They were provided with the same options as in the question dealing with the courtesy and helpfulness of the staff. Yet again, all internal respondents who completed and returned their questionnaire answered this question. Of the thirty-eight respondents, 50% rated their efficiency as excellent, 42% rated it as good, 5% rated it as satisfactory and 3% rated it as poor. This clearly demonstrates that the majority of internal respondents are satisfied with the efficiency of the Information Research Library staff.

The internal respondents were asked to rate their satisfaction with the results produced by the Information Research Library in answer to their enquiries. They were given the options of never, occasionally, mostly and always. Yet again all the internal respondents who completed and returned their questionnaires answered this question. Of the thirty-eight respondents, 63% stated that they were mostly satisfied by the results, 26% stated that they were always satisfied and 11% stated that they were occasionally satisfied.

Clearly, the majority of the internal respondents are satisfied with the courtesy and efficiency of the staff at the Information Research Library. This is good news for the Library Services department, and demonstrates that their attempts to continue to provide a first class service despite the impact of changes has been successful.

Internal respondents were also asked which of the services provided by the Information Research Library they used. The services were press cuttings, reference texts, online services and the research staff. The results demonstrated that the press cuttings were mostly used several times a week, and the reference texts were mostly used once a month. The online services were mostly used once a week, and the research staff were mostly used several times a week. The results show that all the internal respondents were aware of the individual services and the majority made some use of all of them.

A third priority for this study was to assess the awareness of library services outside the BBC. Although the services were briefly described in the questionnaire, perhaps greater detail could have been included in the covering letter, to ensure that external respondents understood all the terms. The results show that the majority of the external respondents estimated that they would use the press cuttings service on a monthly or weekly basis, although some did suggest that they would use it on a daily basis. The majority of the actual users of the service, that is the internal respondents' use the service several times a week. Turning to reference texts, both internal and external respondents gave a similar pattern of responses. The majority of both sets of respondents said they would use this once a month. Turning to online services, eight of the 12 external respondents estimated their usage and 27 of the 38 internal respondents recorded their actual usage; 25% of the external respondents estimated that they would use the service on a daily basis. This contrasts with none of the internal respondents. The majority of the external respondents estimated that they would use the service several times a week, whereas the majority of the internal respondents use the service once a week.

Seven of the 12 external respondents estimated their usage and 31 of the 38 internal respondents recorded their actual usage of research staff. The majority of the external respondents estimated that they would use the service once a month, whereas the majority of internal respondents use the service several times a week. It is probable that this could be attributed to the fact that the external respondents have no experience of the skills and knowledge of the research staff, and so are not in an informed position to estimate to what extent they would make use of them.

External respondents were asked to outline how much they would be willing to pay per annum for access to the Information Research Library and its services. They were to choose from the options of £0-£500, £501-£1000, £1001-2000, £2001-3000, £3001-4000. Ten of the 12 external respondents answered this question; 80% of these selected the cheapest option of £0-£500. The remaining respondents selected the £501-£1000 option. If the options had been in smaller bands, we might have obtained some more revealing results, but it is likely that external respondents would still have chosen the cheapest option.

Internal respondents were asked about alternative sources they used and the frequency of their usage. The alternative sources suggested were other BBC libraries, personal contacts, the Mitchell Library, any other media companies and any other sources. (Glasgow's Mitchell Library is Europe's largest municipal reference library.) Thirty-seven of 38 internal respondents replied; 46% said that they used other BBC libraries once a month, and 38% said that they used personal contacts several times a week. Twenty-nine of the 38 internal respondents answered the question about the Mitchell Library, and 59% said that they never used it. Thirty of the 38 internal respondents answered the questions regarding use of other media companies and other sources, and 64% said that they never used other media companies, 23% never used other sources, and 23% used other sources once a month. The internal respondents were invited to give examples of any other alternative sources they used. Examples they gave include universities, colleges and the National Library of Scotland.

Internal respondents were also given the opportunity to suggest improvements to the existing service. The majority of the 38 internal respondents, 68%, gave no answer to this question. Of the suggestions made, only access to the Internet was mentioned more than once.

Discussion

The results show that the majority of the internal respondents are pleased with the service provided and they made some suggestions of additional services they would like. The external questionnaire focused too much on the *Events Guide* and respondents were provided with insufficient information concerning the other services on offer. For example, respondents were questioned how much they would be willing to pay for services provided by the Information Research Library, but it was not made clear what this would entail. However, on a basic level, it has demonstrated that there is some external interest and the results provide a starting block for further research and follow-up procedures.

The use of questionnaires, although not without its deficiencies, has proved useful in this study. The library has a clear indication of the level of its success with internal users, and has gained their suggestions and opinions for change. Regarding external respondents, the questionnaire has shown that there is some interest in buying the services of the Information Research Library and has provided a stepping stone to further research and openings that should be pursued by the Library Services department. Our results show that there is potential demand for the Information Research Library's services, outside the BBC. The BBC clearly has the potential to raise some modest sums by selling subscriptions externally. However, careful consideration will have to be given to the potential impact on quality of services should the Library's services be provided both internally and externally. For example, if several queries arose within a short space of time, would internal or external users take priority? Another example is, should coverage of the *Events Guide* and the press cuttings be amended to cater for the specific needs of external users? The BBC must balance the additional costs of offering the services of the Information Research Library against the income that is likely to be generated.

At this stage, it is impossible to judge the success of the exercise in terms of making non-users more aware of the BBC library facilities, and of making users more intensive users of the services. Nonetheless, the research demonstrated a willingness by users and non-users to respond to questions put to them, and has provided valuable pointers for the future development of the BBC Scotland library and information services.

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Creating a ring of commitment to customers

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Abstract
Customers are widely demanding that organizations be committed to achieving higher and higher standards, in return for their loyal support. Information technology (IT) can potentially help to achieve this commitment, and we examine some successful cases. Yet, for most organizations, the implementation of such strategies is fraught with problems. Databases which should be gold mines degenerate into dustbins, and inter-departmental strife tears apart the organization's commitments. We examine how organizations can negotiate binding commitments to customers, which cross departmental boundaries, and draw some lessons about the successful use of IT to support organization's marketing objectives.

Introduction

Today customers want commitment from those who serve them. In our diverse and turbulent markets, some customers want respect as individuals; others seek consistency, more customers expect suppliers to learn to keep track of their changing lifestyles; in addition, they require value for money in terms of their available incomes. Faced with such diverse customer needs, how can organizations use information to tame their turbulent environment?

Learning about new customers and markets

A paper-goods manufacturer decided to introduce an entirely new type of product to the consumer markets in the 1970s. To do so, it needed to learn about the four million prospective customers for its ten cent product, who were somewhere in the United States, a country whose population exceeds 250 million. The company did so, and succeeded in creating such a good impression with those customers that they kept coming back over and over again. Business achieved 40 per cent compound annual growth, gaining 10 points' market share over formidable opposition, with customers spending over $1,000 over the period they needed the product.

The manufacturer was Kimberly-Clark. It took the drastic decision of spending $10 million to construct a database programme which can identify and name 75 per cent of the four million new mothers each year. It started by getting the name of the expectant mother from the hospital or doctor. The mother receives very personal letters, which include beautifully prepared educational pamphlets about caring for a new baby – communication which builds a relationship with the mother. When she has returned home with the new baby, and needs diapers, Huggies cents-off coupons arrive to cash in on the goodwill created by the pamphlets.

Furthermore, Kimberly-Clark has an invaluable by-product – a huge and annually growing database of information about parents and children by name and address. This database is as much an asset as factories and forests. It can be used as a market for many products other than disposable diapers. For instance, a series of beginning readers for the kindergarten child... printed, of course, on Kimberly-Clark paper.

But isn't the $10 million programme prohibitively costly? Kimberly-Clark, by thinking through the arithmetic, changed the rules of the market. It calculated that a family that uses premium quality disposable diapers spends $1,300 on them in the first 2 years of the child's life. By focusing on the *lifetime value* of the customer, rather than the *unit sale*, they changed the entire marketplace.

The Kimberly-Clark story illustrates an important point. For certain applications, particularly at the operational end of marketing and selling, simple raw data can be useful. In the Huggies case this was simply name and address. Direct mail targeting, telesales productivity, sales automation, are all applications where large volumes of raw data fuels the marketing process.

Communicating with customers as individuals

British Telecom had a deservedly terrible reputation after privatization. It spent £40 million annually on advertising and customer communications and developed thousands of new products and services. Yet the customers remained baffled as to what the company offered, and became more and more annoyed with BT's inability to communicate relevantly. Clearly BT was wasting its money treating a wide variety of customers as a mass.

BT had a particular problem in the small business sector. This has always been one of the great challenges to business suppliers. In the late 1970s, Xerox made a strategic blunder in neglecting small businesses – and permanently lost the sector to Canon and other Japanese firms.

BT needed to know who were the different small business targets, and how they should be communicated with. By sending a questionnaire to its customers, and analysing the responses, it discovered that there was no such thing as the average small business person, but five distinct types:

- *Enthusiasts.* These people treat telecommunications almost as a hobby and loved to be kept up to date with the latest functions and features. All communications with them needed to reflect these attitudes.
- *Luddites.* They hate everything modern and technical. However, give them a few practical examples, and you might get them interested.
- *Corporate executives.* Managers and directors who respond best to arguments about benefits and competitive advantage.
- *Shopkeepers.* Shopkeepers have very little use for the phone, so there is little justification for communicating with them.
- *Traditionalists.* These people are interested in ease of use and easy maintenance.

Every individual could now receive a relevant communication from BT. The enthusiasts could be sent catalogues, full of functions and features, and receive regular updates. They could be invited to join the 'BT Information Exchange'. A dialogue between them and BT may develop, sometimes resulting in a sale, but always resulting in a satisfied customer.

Corporate executives, on the other hand, were invited to request a card index of information about benefits and competitive advantage from telecommunications. The customer always guides the dialogue with BT, receiving prompt appropriate information only when requested.

Knowledge of the customer is the key to BT's success. Programmes that respond to customer needs are expanded; those that fail are not repeated. By gaining knowledge of successes and failures, marketing at BT is becoming more accountable. BT has been systematically expanding its knowledge of the marketplace since the mid-1980s. Over the years this body of knowledge could begin to change the organization and its stance in the marketplace.

Managing the micro markets

In the United States, Frequent Shoppers Advantage Inc (FSI) is luring promotion-sensitive brand-switching consumers to participate in a frequent shoppers programme. This new development threatens to change the shape of the advertising industry, as well as adding micro market focus to retailing.

Coca Cola, Nabisco, Jell-O, Hormel and Frito-Lay are some of the 160 brands participating in the programme, which offers members points that can be redeemed for merchandise. Consumers are surveyed before participating in the programme. Each customer is issued with a personal smart card. This contains both static information about who the shopper is, and dynamic information about their changing purchase behaviour. The static data includes name and address, credit card numbers, telephone number, and profile information about sex, household, age, and family data.

The customer dynamic data includes gross purchases, number of visits, last visit date, average number of items purchased, coupon data, shopping lists, frequent buyer points, buying preferences, and other information. This individual customer data is the heart of the FSI marketing system. It can be used to accurately determine those customers and prospects who are most likely to buy particular products and services. It can be used to offer customers more or less coupons. It can be used to identify patterns of behaviour that suggest that customers are getting less interested in retail stores and therefore are likely to lapse to the competition.

When a customer arrives at the store, they hold up their smart card to be read. The screen springs to life, showing how many frequent buyer points have been earned, and the prizes available. It lists the premiums available for such items as video tape rental, film development and so on. Special offers for card holders are also shown, coupons too.

Already today in the United Kingdom, coupon programmes exist. Back in the 1950s, Green Shield Stamps offered incentives for shopping at certain stores. When every store began to offer the same benefits, however, the marketing advantage was lost. The smart card is not such a generic benefit. Targeting products and services to each individual shopper will allow flexible programmes and keep buyers loyal.

In our case example, the coupons offered might be for, say, Huggies disposable nappies. These coupons have been offered on the basis of the customer's past buying patterns and lifestyle. For example, the Huggies nappies are offered to a young mother with a baby. Coupons are not offered to non-parents. We will see later the number of coupons offered to individual customers can be tailored very precisely to the buyer's needs. Of course, this technique does not have 100 per cent accounting accuracy – but it is a significant improvement on older, more wasteful couponing techniques. A recent study has suggested that the number of unredeemed shopping coupons in the United States exceeds their Gross National Product.

The shopper then receives a shopping list. This is printed with items that this individual has bought often in the past. It may also include one or two additional items that are of potential interest. It is printed in the same sequence that the customer can most conveniently walk round the supermarket. It also shows items where coupons and specials are available.

At the check-out the shopper also uses the smart card. The card can be used for paying the bill, but also to see the points collected as a result of this visit. New coupons show on the till receipt. This method of delivering coupons is quicker than any of the traditional methods used in the past. It is also much more cost effective than door-to-door distribution or any of the other traditional methods of coupon distribution.

One of the problems that retailers face is that after customers have left the store, they are out of reach. Customers who started to go to competitors could not be brought back. However, using this new technology, lapsed customers can be identified by virtue of their lack of recent shopping activity. After a time, a well written letter can be sent to the shopper offering them incentives to re-visit the store. Bonus coupons, prize draws and a variety of marketing methods can be used to entice lapsed customers back into the store.

Armed with information about who customers are, it is possible to analyse who has received coupons, and to work out why they are not working and how to improve performance. For example, a woman with one baby who has not bought Huggies in the past should, perhaps, be offered more coupons. Conversely, a parent with many children who already buys Huggies may not need coupons. This type of analysis has been applied widely in the United States to the marketing of products such as Huggies. It has proved enormously profitable for targeting the *right* promotional spend at the *right* consumers.

Doing the impossible – low cost AND variety AND consistency AND learning

Viking Direct is a distributor of office supplies to UK businesses. The concept, on paper, is simple. Create a mail order office supplies business that features a variety of merchandise, provides free delivery to good customers (ie. those ordering more than £30 worth of goods), same-day delivery in London, consistent service, active personalized promotion, and then offer prices 30 to 70 per cent less than those of more traditional office supply retailers, such as Rymans. And learn your customers' needs and respond to them.

The secret of its success is its computer system. It keeps track of customers who are Frequent buyers; those who are Recent buyers; those who buy large Amounts; and those who buy certain Categories of product (like computer stationery). Viking Direct uses this FRAC database to manage its relationships with customers.

Inactive customers, for instance, will receive occasional letters asking them if anything is wrong, and offering them incentives to purchase. The company frequently receives replies to these, showing that even inactive customers appreciate Viking's attention.

Frequent buyers receive more frequent contacts than infrequent ones. Viking finds that the extra cost of more frequent contacts is more than offset by the higher revenues from these buyers.

Particular categories of purchase may generate an additional offer. For example, on my computer supplies catalogue was printed the following message: 'You ordered computer diskettes in May, but you haven't tried our special offer disks. Ring now and they're yours for just £2.99 per box. Just ask for Dr R Shaw's private sale No PS7-350DD'. These comments cause the average customer to open the catalogue and look inside, to check how much of a saving is on offer. Once inside, the average person then spends 5 or 10 minutes scanning the pages for bargains.

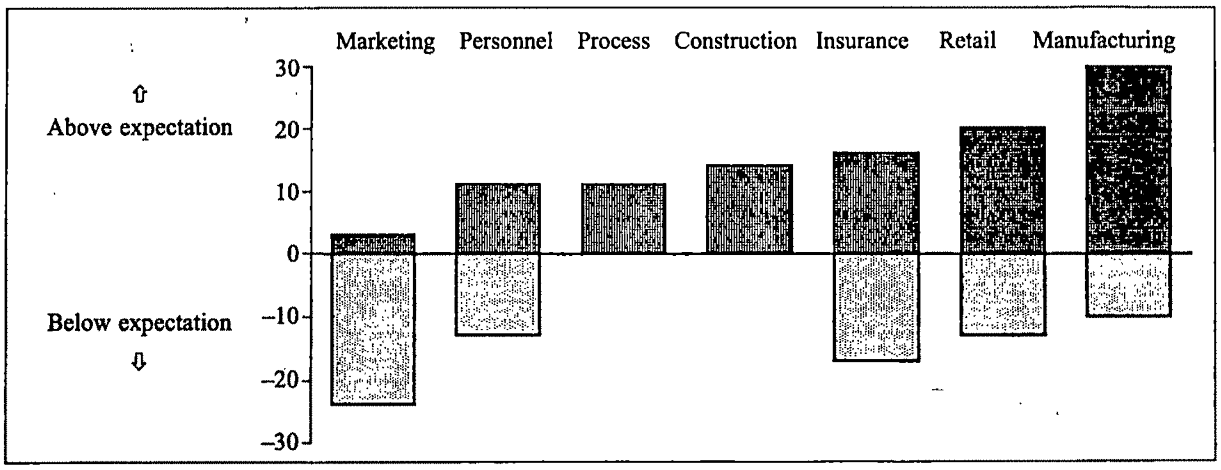
Another technique is the anniversary. 'Congratulations on our 5 year anniversary together! Your first order with Viking was in October of 1990. Here's your gift from us. Just ask for ASH-PRMCL028.'

Viking combines all the tricks of the retail trade – special offers, free gifts, loyalty offers and so forth – with a personal level of service that previously was only possible in small, local shops. Now at Viking the computer has combined the benefits of superstore promotional muscle with the small, local shopkeeper's friendly service.

REALITIES: DATA DUSTBINS, WAREHOUSES AND GOLDMINES

If the benefits of information systems, such as those described above, are so attractive, why doesn't everyone have a successful one? They sound as though they should be a veritable gold mine. Yet, in reality, most companies do not have successful systems, as the survey of user opinions in Figure 1 shows. Marketing is the least successful of today's information systems areas.

Figure 1: Level of satisfaction of users with their systems



MYTH	REALITY
The information system collects what we need	We collect what is easily available
The information system measures what matters	We measure what is least embarrassing
The information system users understand what data they need	We know what we used last, what the textbooks say and what might be interesting on a rainy day
The information system needs to hold more and more data	We feel safer with loadsadata, even when we haven't a clue how to use it
The information system must integrate the data physically	We like neat solutions, whatever the cost
The information system will save staff time	We need more and more staff to analyse data
The information system will harmonize marketing, finance and sales	We all compete for scarce resources, and this involves fighting
The information system is the one source of our market intelligence	We haven't thought through the business problems

Figure 2: Myths and realities about information systems

DEPARTMENT	WANTS	WHICH CAUSES	TO BE LESS GOOD AT
Marketing	Customers to receive personalized service	Operations	Containing costs by spending less time with each customer
Finance	Pricing to cover short-term costs	Sales	Negotiating to secure long-term customer loyalty
Credit control	Credit limits to reflect financial risk criteria	Sales	Winning business from long-term prospects
Computing	Databases to be shared across departments	All other departments	Reducing their overheads
Manufacturing	Standard product features	Product development	Creating a competitive product range
Purchasing	Lowest cost bids	Manufacturing	Quality control, failure and defect reduction
Sales	Enquiries to be qualified by whoever takes the message	Operations	Reducing cost of telephone time and effort
Advertising	Long-term budgets to support	All other departments	Obtaining funding for other valid investments
Operations	Standardized service to meet BS5750	Marketing	Offering differentiated service levels to various market segments

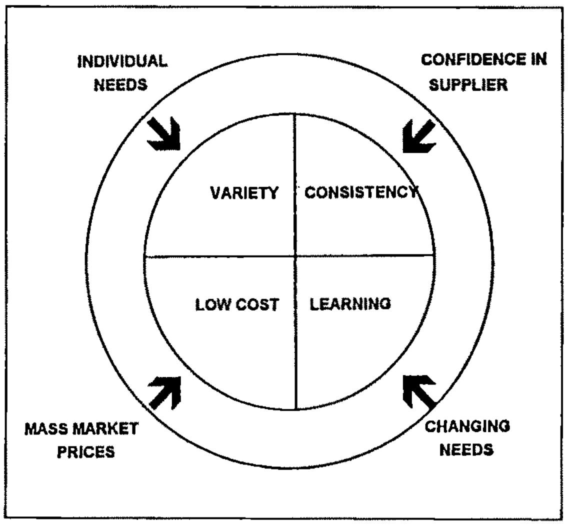
Figure 4: The logic of inter-departmental strife

The reality is that most marketing information systems often represent a compromise between the strategic requirements of the planners and the tactical requirements of direct marketers, telemarketers and sales managers, customer service and other functions. Another trouble for newcomers to the world of databases is that they fall prey to the many pitfalls, and believe many of the myths.

The consequence of these problems is that databases are dustbins. They very often hold data that does not fit the purpose of the tacticians, far less the needs of strategists. One of the most acute problems is that of reconciling the internal and external views of the markets. The usual problem is that data retrieved from the sales ledger rarely possesses the details needed to link customer records to market segments. Some of the problems are described in Figure 2.

It would be tempting to put these problems down to incompetence. Yet Competence is rarely to blame. There is logic to most strife in businesses. External customer commitments cause competing internal commitments within the organization (See Figure 3). Some departments offer variety. Others choose consistency. Some select a learning agenda, while others go for low cost. It is competition between these internal commitments that degenerates into strife. Unless organizations establish a mechanism for negotiating joint commitments, strategy implementation is doomed.

Figure 3: How external customer commitments cause competing internal commitments



Just ask people how effectively their intended customer strategies are realized. A very few might claim their intentions were fully realized, and even then I would suspect their memory or honesty. A few others claim their realizations had nothing to do with intentions, that they didn't believe in strategy. Most, I propose, would blame the gap between intention and reality on a mysterious *lack of commitment*. Few realize that commitment is something that can be created through hard work.

Without doing the work needed to negotiate a joint commitment across different departments, an organization striving to implement its customer-strategy faces inter-departmental strife.

As many customers know to their cost, some departments are helpful, others rude, some are slow and others are quick. For most customers, the experience is disturbingly chaotic. Marketing may want customers to receive more personalized service, but this would require Operations to spend more time and money dealing with the customer. Finance may want pricing to cover short-term costs, but this would cause Sales to limit their negotiations with long-term prospects. Purchasing may want to buy from the lowest-price supplier, but this would cause Manufacturing to reduce quality, and Operations to handle more customer complaints.

Such internal trade-offs are a necessary logical part of strategy implementation. In quieter times, when markets were more static, such implementation issues were informally resolved over a long period. Yet, in today's turbulent times, there is little time to resolve them. People may arrange meetings and hold committees, but they often degenerate into haggling, in-fighting, and politicking. Hardly surprising that customers are distrustful of such companies' reputations, and frustrated by their chaotic behaviour. Yet many companies have survived so far in the face of this chaos.

Why is change now on the business agenda? It is because customers, the government, its regulators, and the media are all demanding that organizations are committed to achieve higher and higher standards, in exchange for their support. And because competitors are getting better at teamwork as a result of using new management techniques, such as BPR, and new technologies such as groupware and data warehousing.

What needs to change? What is needed is a ring of commitment around the organization, binding together the different interests. Customer commitments are ideally met by a team or group. No individual person or department is wholly responsible for all aspects of the customer. In reality, for most organizations today, cross-departmental teamwork is extremely limited and each department still sets its own rules and standards for customer commitments. Take, for example, the financial services industry, where an average mortgage application requires more than 40 actions by over 10 departments before the customer is satisfied.

How is change possible? Pharmaceutical company, Boehringer Ingelheim, established a cross-business mechanism to resolve the customer commitment issues that it faced. It had already expanded from £10m in 1987 to £25m in 1992, and the rapid pace of growth was set to continue. Marketing Director, John Dixon, created series of workshops which identified the critical business problems that growth presented, and quantified the value and benefits of solving them. Dixon ensured that the people responsible for running the business created the solutions, as this ensured their commitment to change and to contribute to the implementation of the strategy. Today, Boehringer has seen these solutions through to completion, including computer systems, processes and culture changes, and a key factor in their success has been the commitment generated by the workshop mechanism.

As well as commitment to strategy, what is also essential is commitment to change business processes. For example, British Telecom's strategy in its small business market was to grow rapidly. To implement this it had no alternative but to change radically its business processes for handling small business customers. The company had to introduce a Telephone Account Management process to be more systematic in learning about customers' needs and responding to them. The existing field-sales team was simply uneconomic. Implementing this radical change required significant commitments from departments, locally and centrally. Anna Thomson, the manager responsible for obtaining the implementation commitments, required great perseverance and negotiating skills. However, the pay-off from the changes was significant. BT discovered that some businessmen were Luddites, and hated every aspect of technology, while others were gadget freaks and loved all the buttons and features. By responding differently to different customers they substantially increased their volume and profitability from this sector.

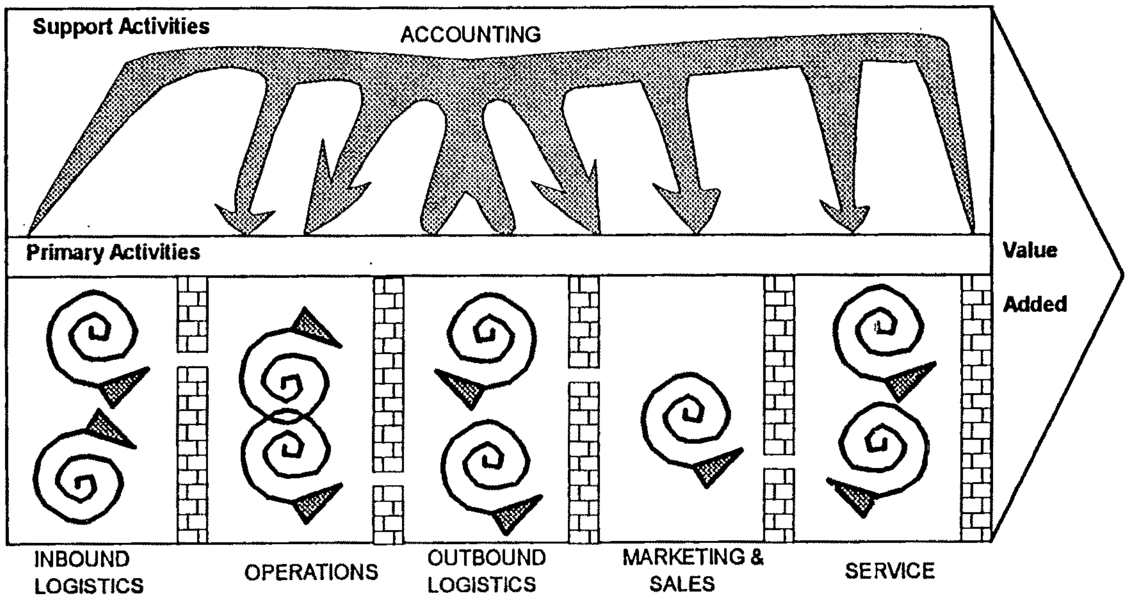
Implementation of new business processes can spawn a wealth of management information – or none at all. What is finally needed for successful implementation is commitment to measuring the customer relationship, and ensuring that the strategic intentions are realized. Conventional financial reporting systems in most companies ignore the real drivers of customer relationships – they focus on balance sheets, profit and loss accounts, but not on the customer. They are like a thermometer, telling you your temperature, but not why you are hot. To be actionable by managers, the emphasis must shift towards measurement and reporting of non-financial factors: how are we getting on with our customers? what percentage are we retaining? How many new customers have we acquired? How many are active, and how many inactive? How do we compare with competitors?

Tupperware household products are sold through a complex network of hostesses, dealers, distributors, and regional managers. Products, promotions and incentives flow one way through the network. Information flows back to ensure the vital co-ordination of this complex web. In Europe, they have been developing powerful computer systems which keep track of all the key performance indicators throughout Europe, and alert managers of problems and spotlight opportunities.

The detailed performance measures required must be tailored to specific business needs in an exercise jointly carried out by marketing, operational and financial staff. Business processes get tied back to a series of 'objects'. These are typically customers, products, channels, sales staff, and so on. The success of the exercise depends on the people responsible for running the business driving the systems that are developed. While everybody is talking about business processes and BPR, they will achieve little unless suitable measurement systems are in place.

Team processes have recently received a technological boost from the new 'groupware'. Software like Lotus Notes offers more power than the traditional 'database marketing' systems of the 1980s, by supporting a more pro-active approach to customers, and offering the potential to integrate the work flow and analysis needs of the business. For example,

Figure 5: Information flows in the value chain



First National Bank of Chicago, one of the premier commercial banks in the US, uses groupware to pool the knowledge of its global sales team about opportunities. FNBC staff can update themselves using Call Reports, Deal Records, and News Feeds from all over the world, and stay well ahead of the competition in terms of knowledge about clients' business and major market issues.

Teamwork is easy to talk about, but much harder to achieve. For a decade after Michael Porter's famous book about cross-functional value chains, companies have struggled with the political realities of information flows on the value chain.

Information is often controlled by support activities and they organize all information to pass through them. Departments build walls preventing other departments from meddling with them. Departments create significant delays in passing information to other areas. Information is sometimes passed from one area to another many times, often moving around and around their local area, but finding it difficult to move on. These islands of information often suit the purposes of all concerned, and there is a silent conspiracy to preserve the status quo.

John Harvey Jones offers some perceptive insights into the business realities, 'One of the reasons why so little has been done in this area, apart from the impenetrable jargon, has been the tendency to allocate the responsibility for computers to the accountancy profession – as though their entire role was merely to be a part of cost accounting. It is important to make the use of computers a part of the whole business, rather than being a peripheral service to a business which is still organized conceptually and operationally as it was before these invaluable tools became available. The impact of information technology is at its most striking when the whole business approach changes to take account of the possibilities which it offers.'[1]

HOW CAN JOINT COMMITMENT BE CREATED?

How can the necessary joint commitments to change be created? Can top management ease the chaos by simply telling people their commitments? Many believe that such 'strong leadership' is the solution. Igor Ansoff counsels managers not to tolerate those who back out of their commitments and to, 'threaten them with the displeasure of the big boss and tell them he loves planning'.[2] Yet implementation-by-directive seems doomed to fail. Empowerment has undermined most top managers' authority. And, on the inevitable day of reckoning, a host of convenience excuses, and legitimate ones, will come to the minds of those implementing the strategy. As one manager who was told how to behave commented, 'In the past eighteen months, we have heard that profit is more important than revenue, quality is more important than profit, that people are more important than profit, that customers are more important than our people, that big customers are more important than our small customers, and that growth is the key to our success. No wonder our performance is inconsistent.'[3]

What exactly is meant by commitment, and what isn't? Agreement isn't commitment. Each day at work, people agree to all sorts of proposals, which they have no intention of ever fulfilling – unrealistic corporate objectives, hockey stick sales curves, mysterious recoveries, selfless devotion and corporate loyalty. Head hunters would be out of work within weeks if people didn't 'play the corporate game'. Organizations that tell their staff one minute that 'our people are our most important asset', the next minute are 'down-sizing', 'de-layering' and 'tackling the cost base.' It is almost as if there is a joint conspiracy of both people and organizations to avoid confronting reality and to encourage individual self-deception and collective 'groupthink'.

Passive agreement seems to lead regularly to de-commitment. The people agreeing to a strategy feel good about themselves, or enjoy the momentary relief of being off the hook. However, when implementation time is near, the excuses fly, and a host of convenient factors, said to be beyond people's control, frustrate events. This type of spurious agreement can be used to con other people, or to con yourself. It is a common political ploy among senior managers who must be seen to be (passively) in favour of change but are secretly against change. The agreement game is like boxing to be saved by the bell.

Commitment is something you say you'll do, and then you do it. Legal theorists call it a relational contract[4], economists call it an implicit contract[5], games theorists call it co-operation[6], and sociologists call it a trust relationship[7]. It is an act of honour and integrity, with no excuses, no rationalizations. On this basis, commitments can only be judged retrospectively. With agreement, failure involves little loss, but with commitment, failure involves loss of integrity. The contract of commitment is a thousand times stronger than the contract of agreement. Without commitment to implementation, strategic chaos reigns.

What mechanism is needed to get sound, not easy, commitments? Parts of the answer can be found in the works of the legal, economic, social and games theorists, and also in the findings of the Harvard Negotiation Project[8],[9]. First, by reaching commitments in a working meeting with a group of one's peers, rather than a private pledge between two adversaries behind closed doors. Second, by working repeatedly together with one's peers, to build up the sense of trust. Third, by heightening the fear of the consequences of de-commitment. Fourth, by working hard as a group on options for mutual gain. Fifth, by focusing on business interests, not departmental positions. Sixth, by concluding negotiations on the basis of unanimously agreed criteria.

Commitment is built up over a series of steps:

- *why* change?
- *what* to change?
- *how* to change?

The first piece of hard work for the group is to determine *why* change is necessary. Creating a compelling reason for change, as a first step, prevents members of the group from backing out at a later stage. Second, they must decide *what* must change. Finally, they negotiate *how* to change. During this last negotiation stage, the trade-offs between different departments are resolved. Because such negotiations are tough, and can seem unpleasant, many organizations avoid them (and live with the resulting chaos). By agreeing why change is critical to survival, before entering negotiations on how to change, it becomes impossible for any of the parties to walk out of the negotiations. They are forced by peer pressure to carry on until they have found a solution.

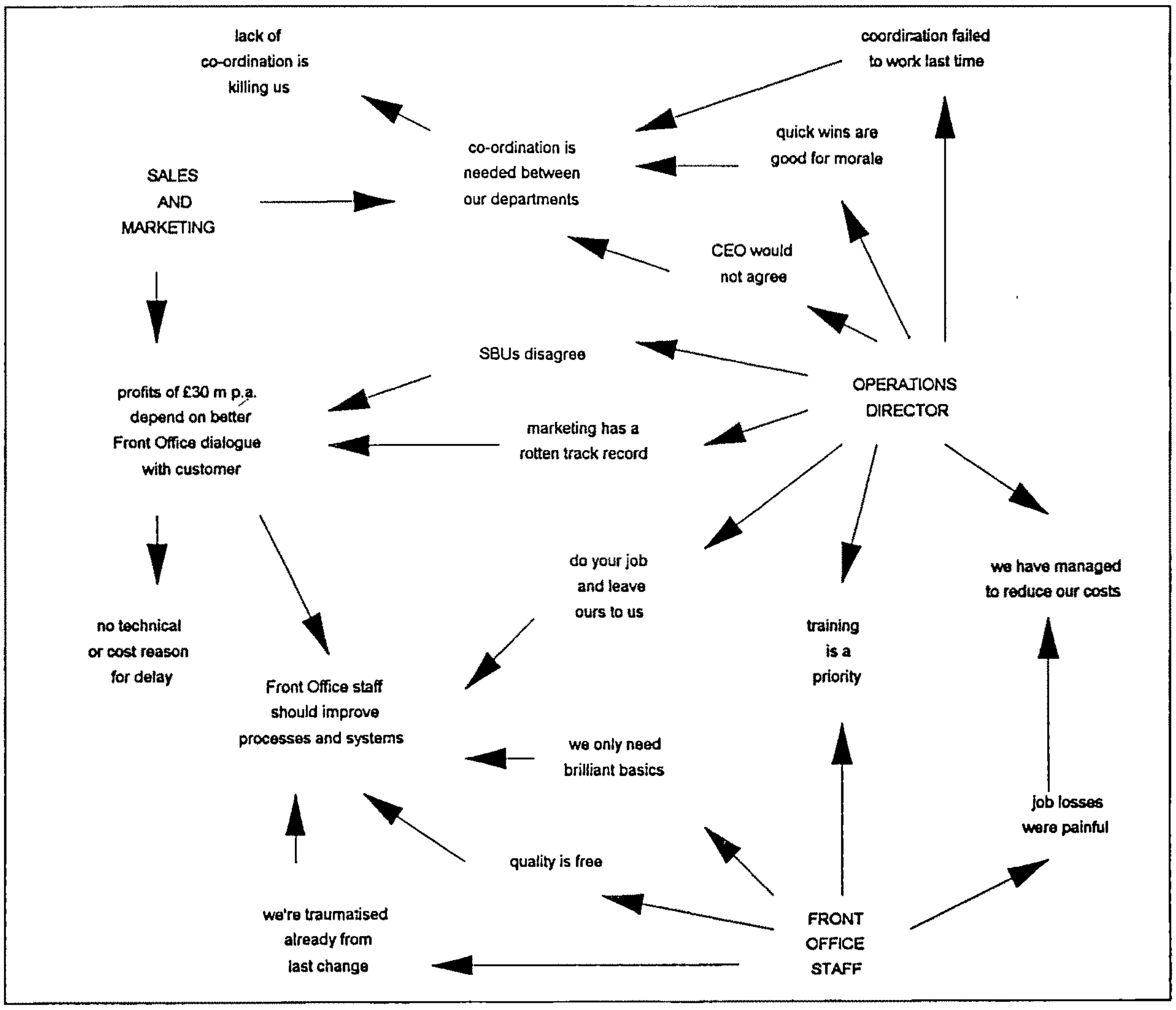
AN EXAMPLE OF COMMITMENT BUILDING

A major UK utility used this negotiation approach in 1994 to create commitments to change, and overcome the inter-departmental strife that was gridlocking the implementation of its strategy. A senior management team had developed a three-year strategy, whose 1997 profit projection was over £500 million. However, within months, the implementation of the strategy was proving disastrous. Product launches were failing with monotonous regularity. Many of the new products required changes to business processes and systems, particularly in the Front Office area, and these were getting into deadlock. Advertising and promotion campaigns were absorbing millions in costs, but were performing poorly; nobody knew why and the Front Office were not providing feedback on the reasons.

Empowerment, BPR and systems projects were all under way but, if anything, they were actually hindering the progress of the business strategy. Although £70 million had been spent on systems in the previous year, it all seemed to pour down a black hole, and the new systems seemed even less flexible than the old ones. Lots of small independent, empowered teams were working for quick wins, and yet their individual achievements did not realize the total results expected in the strategic intent.

Behind the scenes, there was little if any co-operation between project teams. Key players had many plausible excuses for backing out of co-operative ventures. So everyone 'stuck to their knitting'. Figure 6 illustrates the web of issues behind the strife.

Figure 6: Network of deadlocked implementation issues to changing the Front Office of a utility


lack of co-ordination is killing us
coordination failed to work last time
quick wins are good for morale
co-ordination is needed between our departments
SALES AND MARKETING
CEO would not agree
SBUs disagree
OPERATIONS DIRECTOR
profits of £30 m p.a. depend on better Front Office dialogue with customer
marketing has a rotten track record
do your job and leave ours to us
we have managed to reduce our costs
training is a priority
no technical or cost reason for delay
Front Office staff should improve processes and systems
we only need brilliant basics
job losses were painful
quality is free
we're traumatised already from last change
FRONT OFFICE STAFF

The Front Office is a department of 600 staff, who answer 3 million customer calls per annum. They operate on behalf of 4 SBUs, covering large, medium and small businesses and domestic customers. Their costs are considered to be high when compared with other benchmarked utilities. Their operation was the responsibility of the Operations Director. After the £500 million Strategic Intent was agreed by the Operations Director, a series of excuses was found for avoiding co-operative ventures. At first, nobody was sure whether or not co-operation was important to achieving the strategy.

First, the Operations Director attacked co-ordination between his department and Marketing. He pointed out that the CEO was opposed to co-ordination, as a matter of principle because it slowed people down. He also cited past failures in co-ordination. Second, he considered Marketing's requirement that Operations Staff should change to be unwarranted inter-departmental meddling.

The Front Office staff are a powerful group. Based in the Midlands they see themselves as 'different' from the London-based management, and they have not hesitated in the past to demonstrate their power and independence. Without their co-operation and support, the strategy would be useless. They opposed the proposals on five counts.

First, the Front Office Staff were under pressure from their boss, the Operations Director, to cut costs, and had already suffered job losses as part of the Cost Crusade. Having at last come to terms with these losses and accepted that cost-cutting is a core value, they couldn't understand why the company would want them to spend more time talking to customers – which would add to costs. Second, they had come to accept the necessity of 'Brilliant Basics' in connection with the Cost Crusade. So, the proposal to spend more time and effort talking to customers ran counter to Brilliant Basics. Third, they had learnt from their Quality programme that 'quality is free'. So it seemed unnecessary to spend money on improving the quality of the customer dialogue. Fourth, the new approach would require more training. However, they had already agreed that training on Quality and Cost Crusade were their top training priorities. Fifth, the proposal would involve major changes. They were still feeling traumatized from the last change programme, and this proposal came too soon after that.

THE 'WHY' OF COMMITMENT

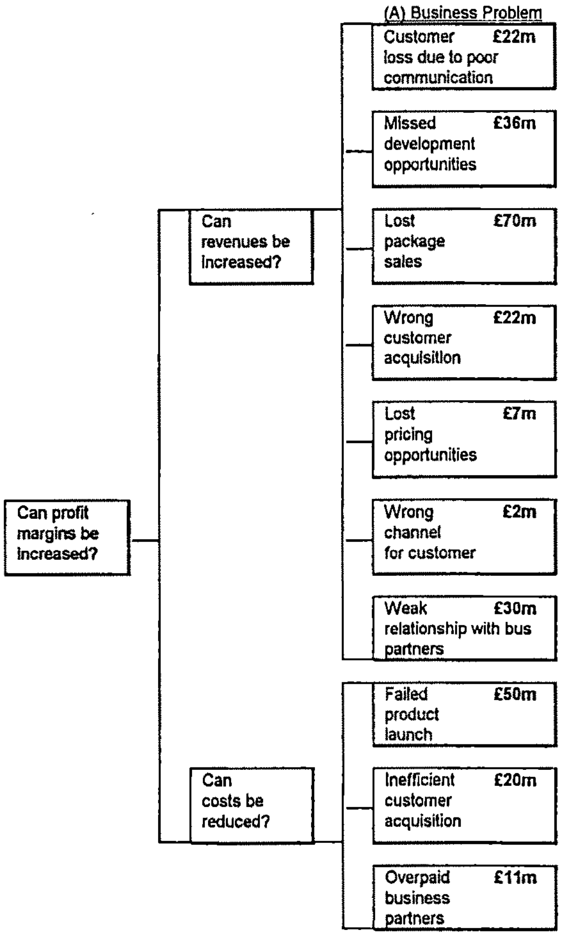
Public fear within the working community about serious threats that it faces can be channelled to become a strong motivator for change. Fear can do more than any other factor to raise the level of the debate above the details and haggling. *Before deciding what or how change is needed, managers must agree why change is needed, and they must fear the consequence of not changing.*

The trouble with fear is that gut instincts can dominate, even when they are wrong. In other cases, the gut feel that guides managers is really a philosophical position, their ideology, and the fear they feel is the fear of the politically incorrect.

The best thing to do about fear is to talk about it, and bring it out in the open, in front of the group. What is harming our organization? What *are* the risks to its survival? In my experience, it is useless to ask people only in private about the problems affecting their organization's viability. Individually, people will tell you all about their gripes and dissatisfactions, giving you a long confusing list which the same individuals would be unprepared to raise in front of the group. Groups of people, with time and the right environment, can be coaxed into articulating the serious issues, and can distinguish the important to the unimportant.

To create the *why* of commitment at the utility, my colleague Gordon Shand and I ran a workshop to get the experienced business managers to analyse the problems they faced in implementing the strategy. From their output, I drew up the Business Problems statement (column (A) in Figure 7). In total, *they* identified that by 1997 *their organization* would lose £270m in profits (which was over half their strategic plan), unless *they* made cross-departmental changes to fix *their own problems.*

Figure 7: Group's analysis of critical implementation problems at the utility


(A) Business Problem
Customer £22m loss due to poor communication
Missed £36m development opportunities
Lost £70m package sales
Wrong £22m customer acquisition
Lost £7m pricing opportunities
Wrong £2m channel for customer
Weak £30m relationship with bus partners
Failed £50m product launch
Inefficient £20m customer acquisition
Overpaid £11m business partners
Can revenues be increased?
Can costs be reduced?
Can profit margins be increased?

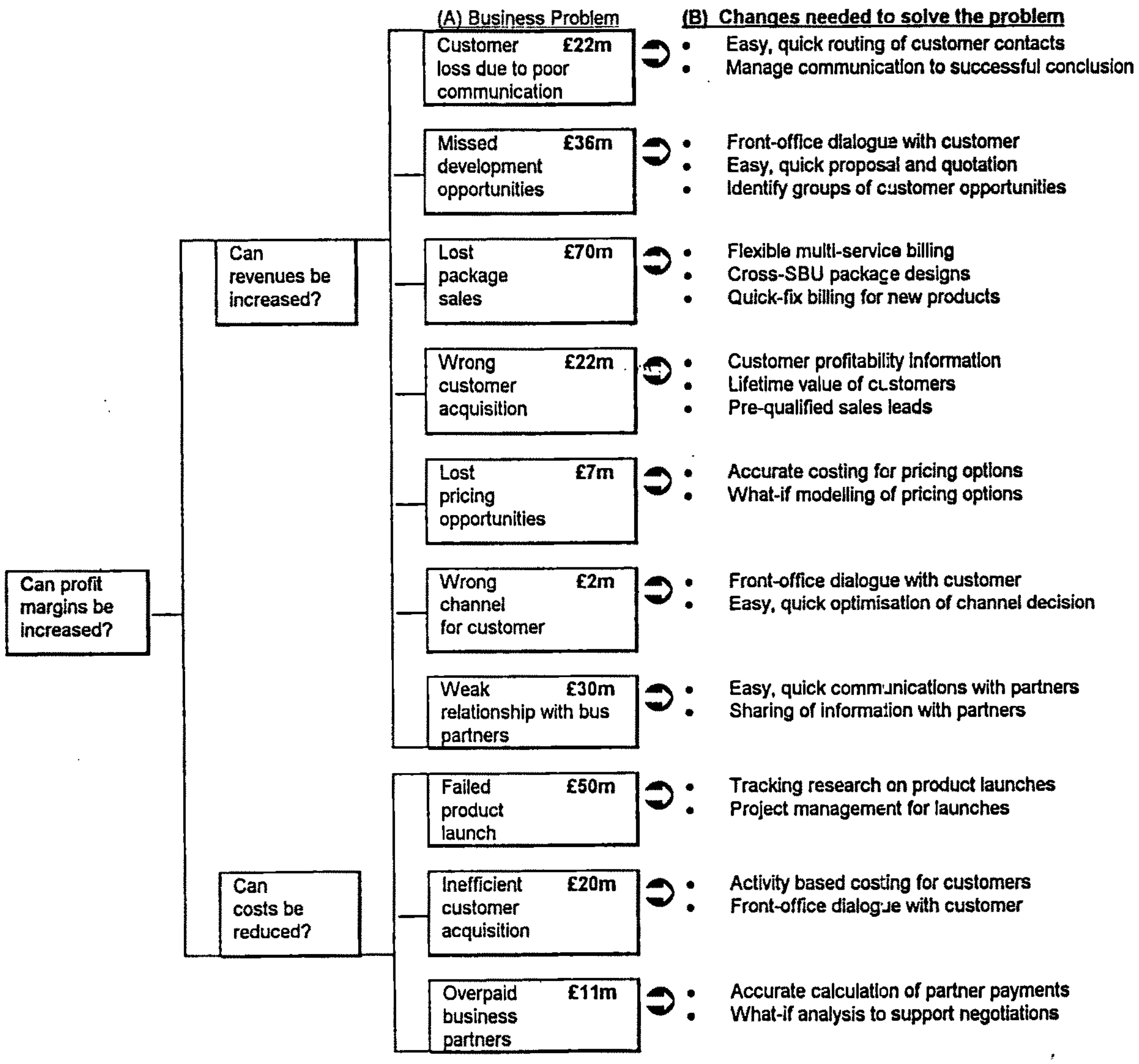
Each analysis and estimate required considerable experience and skill, and was undertaken by those members of the group most closely involved. They used their own best estimates of the factors that affected the problem to calculate its impact. Gordon and I insisted that they took the trouble to develop, on the spot, a simple quantitative model of the problem so that its financial impact could be estimated.

For example, consider the first problem in Figure 7. The group expressed this as 'Customer-facing staff are unable to turn every communication with customers into a development or retention opportunity'. To quantify this, they asked themselves 'Why are we unable...?' and 'What are the retention opportunities?', and 'What are the development opportunities?' Discussion ranged around potential solutions, such as finding out the dates for the customer's contract renewal, discussing their personal plans for growth (for instance, if they are a small business, they may be planning to grow, but have not yet thought themselves about their future purchasing decisions).

The group then developed a model of the benefits of solving the problem: 200,000 domestic customers lost p.a. at £100 each (average) = £20m revenue; £5m contribution. 5% of business customers p.a. (£800m) = £40m; £10m contribution... etc. In total, they estimated that profit opportunities of £22m would be lost if this problem was unsolved. To arrive at this figure, a great deal of analysis was needed, including a study of existing retention figures and cross-selling statistics and a comparison with their main competitors, and statistical data gathered from customer service surveys. The mix of participants was right and they all had the key figures in their heads.

As we went through the problems, the group became more and more adept at developing estimating models of the size of their business problems. By the end of the workshop, everyone had worked very hard, and their gut fear about the problems had been turned into something tangible. Although everyone's gut fear was that the problems were serious, nobody realised they would wipe £270m off the strategic

Figure 8: Group's analysis of what changes were needed


(A) Business Problem
(B) Changes needed to solve the problem
Can profit margins be increased?
Can revenues be increased?
Can costs be reduced?
Customer loss due to poor communication £22m
Easy, quick routing of customer contacts
Manage communication to successful conclusion
Missed development opportunities £36m
Front-office dialogue with customer
Easy, quick proposal and quotation
Identify groups of customer opportunities
Lost package sales £70m
Flexible multi-service billing
Cross-SBU package designs
Quick-fix billing for new products
Wrong customer acquisition £22m
Customer profitability information
Lifetime value of customers
Pre-qualified sales leads
Lost pricing opportunities £7m
Accurate costing for pricing options
What-if modelling of pricing options
Wrong channel for customer £2m
Front-office dialogue with customer
Easy, quick optimisation of channel decision
Weak relationship with bus partners £30m
Easy, quick communications with partners
Sharing of information with partners
Failed product launch £50m
Tracking research on product launches
Project management for launches
Inefficient customer acquisition £20m
Activity based costing for customers
Front-office dialogue with customer
Overpaid business partners £11m
Accurate calculation of partner payments
What-if analysis to support negotiations

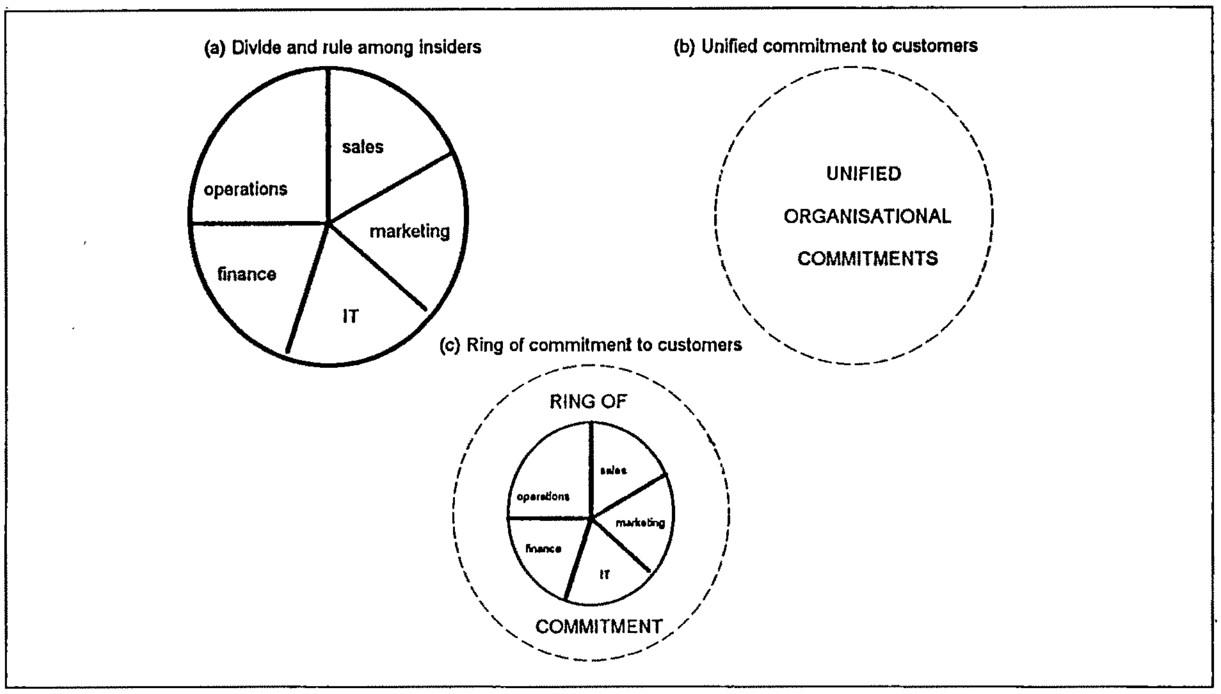


Figure 9: Commitment and strife inside and outside the organization

intent. So, their fears were confirmed, and they became committed to making changes to fix the implementation problems. They understood *why*.

THE 'WHAT' OF COMMITMENT TO CHANGE

Having articulated and examined their fears, and *why* something had to be done, next we ran a second workshop to gain their commitment on *what* to change (see column (B) in Figure 8). Because the list of problems had been so thoroughly examined by all the group, they were already committed to the *why*, and could concentrate fully on what to change.

When looking at revenue problems, the first thing to consider is whether you are missing opportunities to develop existing customers. Customers will be lost if your communications with them are disorderly, disorganized and slow. For example, they may be routed to the wrong member of your staff, or their enquiry may not be quickly followed up, if at all. Solving this was estimated to be worth £22 million per annum, and commitments to change were made again.

If those staff in the front office who talk to customers do not proceed in an orderly and systematic fashion, they can miss out on significant opportunities. If the customer does not receive a quick and relevant proposal and quotation, they will go elsewhere. If the customer is a member of a group of companies, there are likely to be opportunities with other members of their group. In total, these opportunities were estimated by management to be worth £36 million per annum. Changes were identified, and commitments made, to gain back the £36 million.

New services, in the future, are going to be sold packaged into bundles. Substantial future revenues are dependent on the implementation of this packaging which, in turn, depends upon flexible, multi-service billing, sharing of package designs across Strategic Business Units (SBUs), and quick fixes of the billing systems in the short-term. Solving this was estimated to be worth £70 million per annum, and the commitment to change was compelling.

Getting the wrong customer may be as bad as getting no customers. Many domestic users will make losses, as will certain business users, so targeting the right customer is critical. Pricing offers need to take account of peak and off-peak demand. Sales channels will make a difference to sales results, and routing the customer to the right channel is crucial. Business partners need to be nurtured, kept in touch with latest developments and information. Solving these problems, respectively, was estimated to yield £22, 7, 2 and 30 million per annum.

Cost reduction can be achieved by reducing the numbers of failed product launches, cutting the acquisition costs of customers, and controlling the levels of payments to business partners. Solving these problems, respectively, was estimated to yield £50, 20 and 11 million per annum. Further commitments were made to change.

These commitments about *what* to change resulted from the group's articulating its fears, sufficiently so that everyone was unanimously agreed on how serious they were. They found themselves with no real alternative to making the changes needed to solve the problems. Commitment in this case was based on their compulsion to survive, rather than something that they did in response to the boss's vision.

THE 'HOW' OF CHANGE

Having defined *why* and *what* to change, we were ready to negotiate the detail of *how* to change.

First, we decided to consolidate our position, and discuss it with the Chief Executive. We analysed the *whats* and summarized the situation diagrammatically (Figure 9). Inside the circle are departmental territories, and outside the circle are customers, the media, government regulators and so forth. The most personal and private spaces for employees are near the centre and the most public and shared spaces are at the outer peripheries. Borders and barriers between spaces are shown as lines. Thick lines represent strong barriers, thin and dotted lines are weaker barriers.

The existing organization was shown as 'divide and rule' circle, in Figure 9 (a). There are strong barriers that departments choose to erect against other departments and against outsiders. Individual departments such as the Front Office customer service functions, and the sales functions and the marketing functions, all thought they were competent at what they did, and they resented outside interference. But, in reality, they all had different standards and rules for customer commitments. Hardly surprising, then, that the departments do not work in harmony with each other, and customers are frustrated by the resulting chaos.

The ideal situation from a customer's viewpoint is Figure 9 (b), where the organization is unified with no significant barriers to its commitments. However, such ideals are rarely attainable, and Figure 9 (c) is a more realistic goal for an organization: every department or unit of the organization has given up some space to deal with external commitments, and boundaries between departments have been broken down in this *ring of commitment*. The ring is where you build systems and processes with the objective of having a common customer view, and joint standards of departmental commitment to serving your customers. *Creating a ring of commitment requires departments to give up some of their territory, and that is the reason why it is so difficult to negotiate.*

The chief executive's initial reaction was hostile. He explained that he had directed staff to go after quick wins, he had been strongly opposed to 'enforced co-ordination'. The 'empowerment' programme was his creation and aimed to give staff a sense of 'independence and freedom'.

In response, we remembered not to attack his position, but to appeal to his interests. 'If you don't want to gain the £270 million, that's OK.' He thought further about it. He had been one of the team who had defined the *why* and the *what*, so the £270 million was his figure. To de-commit, he would have had to reconvene the group, which he didn't feel empowered to do. We remained together from mid afternoon until late into the night. At the end of it, we had a negotiating plan. This was the starting point for implementation – the *how* of change.

In implementing a strategy, people usually believe they know the right solution – their view should prevail. Experts are the worst. Experts will lecture you about 'best practice' and 'benchmarks', but rarely listen to the practicalities. All available solutions appear to lie along a straight line between their solution and yours. Yet, with hard work and plenty of thinking, you can usually find another solution that splits the difference.

The Chief Executive laid out two guiding principles for our negotiations:

- nobody is an expert
- minimum-cost fit-for-purpose

The second principle deserves a little explanation. Solutions to most problems come in all sizes and shapes. Some are big and expensive. Some are cheap and cheerful. Some do the job, while others don't. Fitness for purpose, in our case, was defined by the *what* change criteria, defined in the second workshop.

The fact that the benefits were agreed unanimously gave us a peg in the ground. We could, and did, haggle over the details of the solution, but we did not yield over benefits or problems. Under pressure in negotiations, we could ask 'Well, do YOU want to give up the £270 million'. This kept negotiations going, while we looked for a mutually agreeable solution.

Another benefit of the workshops was that it had created a network of allies – people frustrated by deadlock – through whom we could:

- obtain energy and momentum for change
- identify other influential players and the circles they move in
- choose the best approach to suit the circumstances
- use their determination to make the strategy happen.

Meetings were held between Marketing, Operations, Finance and the CEO. Dates were set, by which a solution would be reached. Following his meeting, the Operation Director made it clear that the time they would make available for discussing matters with us would be minimal. How did we resolve matters? In these circumstances a direct approach rarely works, and we decided to use our network of allies. To assist us, we selected the bright, principled, tenacious young finance manager who ran one of the financial committees. Operations normally attended her committee. Once she realized how obstructive Operations were being, she started an email campaign to get co-operation, and tabled questions at the finance committee. These were, of course, copied to the CEO. The Operation boss, after absenting himself from a few committee meetings, began to co-operate.

In parallel, we worked through our network of contacts in Information Systems, to identify an alternative solution that might meet everyone's needs. Eventually, after much debating, an alternative solution was found.

The negotiations were not easy. They never are. The secret of their success was our ability to exploit real commitment, made through hard work by the management group, to enforce compliance. Backing out was not a possible option for any individual. The only backing out that did occur was, six months later, when the Operations Director left the company.

CONCLUSION

So, the solution to delivering on external customer commitments involves creating a ring of commitment inside your organization. To make the necessary changes in behaviour, systems, and processes, it is essential that the internal departments concerned are united in their commitment to change. Commitment cannot be mandated, and obtaining it requires negotiating rationally with many departments and making trade-offs between your customer objectives and their other objectives.

Those who advocate empowerment, and challenge the imposition of strategic approaches, should reflect on the persistence of the view that a degree of coercion is necessary to hold an organization together and ensure its survival. A balance has to be reached. In successful bureaucracies, there is much emphasis upon coordination and standardization, and some resistance to abandoning core areas and embracing innovation. Organizations composed of knowledge workers may appreciate the value of diversity, and the idea of emergent solutions, but they still need some checks and balances to control the wilder individual excesses. The organization needs create a mechanism to negotiate this balance between standardization and diversity in order to survive.

Commitment cannot be by directive, from the top down, but must come from joint recognition of common interests. Arie De Geus, in his study of long-term business survival for the Tomorrow's Company project[10], has concluded that their longevity has more to do with 'tolerance' within a 'community of workers', who possess 'external sensitivity' rather than core competencies. His study includes companies over 700 years old. He comments, 'Skills are sold for money, and money is not a sufficient harmonizer between corporate goals and individual expectations'.

General management will have an important role to play in harmonizing individual and organizational expectations. It can and must create the mechanism for inter-departmental negotiations and change, and act as a guardian of the commitments to change. One of the challenges of management in the 1990s will be to throw off the obsessive pursuit of excellence, and the associated cult of the brash, youthful, often arrogant, 'expert', empowered with core competencies, and to take on the more mature role of negotiator and mentor between the internal and external commitments.

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Shared human resources in academic libraries in Nigeria

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Abstract

The aim of this paper is to examine the possibility of sharing human resources between university libraries in Nigeria, a relatively unknown form of cooperation. It examines the opinions of 168 practising librarians who replied to a questionnaire about exchanges and highlights their views. The author recommends the implementation of shared human resources as a matter of urgency between university libraries in Nigeria.

Introduction

Co-operative library efforts have a long history in Nigeria and have increased over the years. The sharing of resources, but not necessarily material resources, is to the mutual benefit of all involved. The basis for any kind of exchange is made possible only through library co-operation and is based on the principle that no single library is self sufficient. Alison supports this statement:

> We are dependent upon each other...
>
> Not one of them, not even the British Library with all their massive resources are self-sufficient.
>
> We depend upon each other and co-operation in the Library context has always existed.[1]

He further argued that it is difficult to imagine how, in this enlightened age, libraries could function effectively on their own. Raghav also validated the principle of library co-operation:

> Inter-library loans and book exchanges have become a necessity today on account of growing mutual inter-dependence to face the explosion of knowledge and ever accelerating technology. No single library can have all the works that might be asked by its users...[2]

This is feasible only through a well thought-out, all-embracing programme of library co-operation.

Methodology

A survey of 168 librarians was carried out in order to collect raw data. A questionnaire was sent by post and data represented was analysed using frequency distribution. A questionnaire containing 20 questions was developed and distributed to the targeted professional librarians of ten selected university libraries in Nigeria (see Appendix I).

One third of Nigerian university libraries were surveyed, the samples used cutting across all types of Universities by status, types of ownership and geographical location, in order to get a balanced output.

Literature review

Although the concept of shared academic library resources is commonly practised among academic libraries worldwide, and by Nigerian University Libraries in particular, relatively little is known of another form of library co-operation in Nigeria, that of shared human resources.

Traditional co-operative efforts such as inter-library loans, gifts and exchanges, resource sharing, staff development, document delivery, collection development and shared databases are well documented in literature of library and information science.

A literature search going back to the early 1970s was conducted and was supplemented with a review of recent research conducted by Abareh on *Staff Exchanges Programme in Nigerian University Libraries*[3]. Uba observed that:

> Many large libraries in this country have training schemes not only for their junior staff, but also for these of other libraries. What they do not do, however, is to co-operate to the extent of exchanging their professional staff or specialist staff... Here is an aspect of library co-operation with a great deal of profit. Surely, there would be advantages to the system and profession if a public librarian is allowed to gain experience of university librarianship for a year, and vice versa. Such librarians come out much better equipped to look at their practices from various angles and their jobs are the better for it.[4]

The concept of staff exchanges as defined by Weeraperuma is appropriate in the context of this discussion when he stated that:

> An exchange ordinarily means that two or more librarians have come to an understanding to exchange their jobs for a fixed period, that at the end of the determined period the librarians revert to their old positions. The exchanges are not necessarily confined to the same type of libraries or same type of librarians.[5]

This definition does not exclude protocols and procedures involved in the exchange process, but emphasis is, however, placed on the consent of librarians concerned who may wish to take part in exchange schemes voluntarily.

Kidd and Roughton reported on a survey of academic library directors and exchange participants from both the British Isles and North America.[6] Dedrick examined *Shared academic library facilities: The unknown form of library co-operation between Institutions in Florida and Texas in addition to Aurarian Higher Education Centre in Colorado.*[7] The human resource implications of adopting IT was reviewed by Norton.[8]

Kelly discusses the benefits of staff exchanges to both staff and institutions.[9] Weeks reported on the benefits brought to the library by the points of view of and experience of the exchange person.[10] Brennen and Sullivan defended the benefits of job exchanges in the US and other countries,[11] while Humphrey emphasized the most beneficial aspect of the exchange as being the development of professional confidence.[12]

Even activities lacking that element of reciprocity between participating libraries, such as when a librarian undertakes to work in another library for a determined period and his vacated position is left unfulfilled by a replacement from another library, are regarded as exchanges.

An important characteristic of exchange is that it is an activity confined to professionally qualified librarians or those nearing professional status. The shared academic library co-operative activities should not be limited to library materials only, but should be extended to include library staff themselves. Moreover, it is impossible for any type of library to boast of having all the funds needed to train all its staff adequately on all aspects of library operations for the obvious reasons of dwindling budget allocation and, in some cases, the shortage of staff.

The need for this survey is necessitated by:

1. Lack of information regarding this type of library co-operation, despite the fact that these types of arrangements have been in existence for some time;
2. The heightened interest in this type of co-operation exhibited by practising librarians in Nigerian university libraries;
3. By the increase in the literature citations over the last several years regarding shared human resources.

The primary objectives of the study were to determine the attitude of librarians towards adopting staff exchange programmes and to create the possibility for the movement of highly skilled professionals between university libraries in Nigeria.

Rationale for shared human resources

There are several reasons why the professional librarian and his or her employers should consider sharing human resources:

- Employees can experience the benefits of a new job and a new working environment
- One can contribute one's unique skills in a meaningful way in another institution
- It allows for cross-fertilization of ideas
- It will promote the integrity of the profession
- Provides conditions for professional development opportunities
- The development of professional confidence
- Librarians involved have the opportunity to 're-charge' their batteries

Survey results, discussion and findings

Of the 168 librarians sent questionnaires, 120 replied, representing a response rate of 71 per cent.

TABLE 1: Understanding the term staff exchanges

Definition	Frequency	Percentage
Exchange is job-sharing by librarians	9	8%
Exchange is a study tour among librarians	17	14%
Exchange is equivalent to sabbatical leave	44	37%
Exchange means in-service training for librarians	10	8%
Exchange of jobs for a fixed period of time by librarians	40	33%
	120	100%

The results from Table 1 indicate that 44 (37%) understood the term as equivalent to sabbatical leave between librarians. 40 (33%) know what staff exchanges mean in absolute terms. The remaining 36 (30%) varied on their responses. From the above analysis, only 40 (33%) understood staff exchanges in libraries, whereas 80 (67%) do not understand what staff exchanges in libraries stand for.

Some inferences that could be drawn from the results are that it is necessary to create awareness among librarians for them to understand what 'staff exchanges' really means. Lack of proper perception of staff exchanges by most librarians may be a major factor for its non-existence in Nigeria.

TABLE 2: Can staff exchanges foster professional development?

Response	Frequency	Percentage
Yes	118	98.3%
No	2	1.7%
	120	100%

From Table 2, it can be seen that, 118 (98.3%) agreed that staff exchanges would foster professional development opportunities among librarians. Two (1.7%), however, did not agree.

TABLE 3: Willingness of librarians to participate in staff exchanges

Response	Frequency	Percentage
Yes	116	96.7%
No	4	3.3%
	120	100%

The opinion of librarians was sought to determine their willingness to participate in staff exchanges, and the result from Table 3 was that 106 (96.7%) indicated their willingness to participate if given the opportunity to do so, giving some of their reasons:

- To share my experience and ideas
- To see what others are doing
- It is beneficial to staff and the libraries
- To see how other libraries operate and to change environment.
- It will enhance our productivity.

Only four (3.3%) indicated their unwillingness to participate in staff exchanges without giving reasons. The conclusion is that most librarians are willing to participate in staff exchanges.

TABLE 4: Experience as a criteria for selection

Response	Frequency	Percentage
Yes	95	79%
No	25	21%
	120	100%

The views of librarians were sought on whether the experience of the individual should be considered for participation in exchanges. They opined that only experienced librarians should be eligible to take part in exchange schemes, and this view was upheld by 95 respondents (79%), with the following reasons given:

- It would be unwise to send an inexperienced member of staff on exchange
- Experience and expertise promote improved library service
- Experience is a requirement for any meaningful exchange
- The receiving library would not want a novice but a professional with some experience.

However, 25 librarians (21%) did not see experience as a 'factor' for considering who should participate in exchange schemes or not, but did not give reasons.

Conclusion

This paper attempted to bring to light the unknown form of library cooperation in Nigeria – that of the sharing of human resources. An overview of university libraries surveyed was discussed. The rationale for the shared human resources was highlighted.

Librarians indicated their willingness to share their experience and expertise with colleagues in other institutions. This calls for consideration by university libraries generally and by university libraries in Nigeria in particular.

It is recommended that, whilst exchanges may often present logistical problems, the benefits to all parties will usually outweigh the disadvantages.

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APPENDIX 1

NIGERIAN UNIVERSITY LIBRARIES SURVEYED

Name of library	No. of Librarians	Responses	% of total replies
Abubakar Tafawa Balewa University, Bauchi	15	14	8.33%
Obafemi Awolowo University, Ile-Ife	25	18	10.71%
Kenneth Dike, Ibadan	24	19	11.30%
Ladoke Akintola University of Technology, Ogbomoso	3	2	1.19%
Ogun State University, Ado-Ekiti	10	8	4.76%
Ondo State University, Ago-Iwoye	11	9	5.35%
University of Jos	14	11	6.54%
University of Agriculture, Abeokuta	5	3	1.78%
University of Ilorin	13	10	5.95%
University of Lagos	15	12	7.14%
University Librarians	33	14	8.33%
	168	120	71.38%

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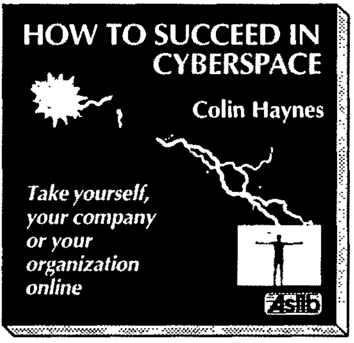

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Foucault's view of knowledge

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Abstract

Knowledge, as represented in the history of ideas and in studies of knowledge paradigms and bibliographical structures, appears coherent and rationalistic. By examining the work of the French historian and philosopher Michel Foucault, this view is discussed. Special attention is given, in any cultural or scientific interpretation of an age, to the need to get behind the dominant or hegemonistic body of institutionalized and documented knowledge. We need to investigate the assumptions and underlying influences on the ways in which discourse embody and shape meanings. What preconceptually underpins, we might ask, what people know as knowledge. Important links between language, truth and power are examined, and these are major concerns for Foucault. It is argued that Foucault's 'archaeological' and 'genealogical' insights into the nature of warranted knowledge are crucial for an understanding of the communication process and the knowledge-organizing activities of information specialists.

Introduction

Knowledge exists in many forms. We find it in the heads of friends and books and CD-ROMs in libraries. Some knowledge is public (like who leads the present government or what Napoleon looked like). Some knowledge is private (like my shoe size or your television-viewing habits). We might be trying to remember it (e.g. for an examination), forget it (e.g. the fright I had last night in the dark), or coming to know it fully. In the last case, we try to impose some order and personal meaningfulness on new information, and fit it to old. We know we know a lot of it, and know too that other people know a lot of it. We know they know, and know that we know they know, and of course they are aware too that we know. So it is that we consciously and deliberatively conduct social exchanges like making friends, buying things in shops, or asking for change on the bus.

Such knowledge relies on signifiers – usually words, although they can be images or symbols – to allow communication to take place. Links are made, and assumed, between *things* and *words* (a process called *representation*), and this enables us to refer to a common universe of meanings. This universe of things is represented in and by a universe of discourse. Through discourse knowledge is made, unmade and remade (constructed, deconstructed and reconstructed), reaffirming the familiar case for the social construction of reality that underlies so much our interpretation of human affairs. These principles lie at the heart of information handling and retrieval, both cognitive and practical. There, things are given names, are organized in hierarchical and thesaural ways, questions are formulated using concepts and seeking matches, and ways are devised (e.g. subject headings, notation, probabilistic weighting) to retrieve knowledge (reified as documents or citations) with relevance and utility in mind. Mismatches in signification cause low specificity and exhaustivity in retrieval, and misunderstandings in the reference and advice interview.

Many writers have examined issues of public and private knowledge. Notably among them have been Ziman and Polanyi, Popper and Geerz. Contrasts have been made, by educational researchers and others, between concrete and abstract entities and the knowledge we have of them, and the role this knowledge plays in understanding understanding (say in learning and teaching). Other writers, like Gurvitch and Knorr-Cetina, Schutz and Heckman, Berger and Luckmann, have emphasized the important distinction between *objective* and *subjective* knowledge. There has been a tendency to associate objective knowledge with scientific and positivistic modes of inquiry and explanation (say, in research), and subjective knowledge with qualitative (naturalistic, illuminative, ethnographic, phenomenological) modes of inquiry, explanation, and human experience.

Contrasts, too, have been drawn between *literal* and *metaphorical* discourses and methods of explanation, and the domains of knowledge they suggest and imply. When people share or engage in such domains, discourse takes on recognizable forms and structures, as in academic disciplines, professional expertise, organizational cultures, consensual and normative views in society at large (say, about ethics, punishment or marriage), social policy assumptions (say, about the value of funding medical research), and ideologies (like capitalism and marxism and feminism). In all these domains of knowledge general propositions and specific facts and opinions are falsifiable, as Popper suggests (see the famous example of 'All swans are white'). In all of them, too, knowledge is rarely static, or even stable, because of new knowledge, changing paradigms (Kuhn's revolutionary or evolutionary case for one paradigm replacing another, as Galileo's

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view of the universe replaced Ptolemy's), and because of the innate reflexivity of knowledge-users which predicates and accelerates change.

Knowledge, unlike the Great Lakes or Tierra del Fuego, is of no necessarily finite size. It is unlike the thirty thousand or so lines of surviving Anglo-Saxon poetry. It is only implied and inferrable when, say, a student picks up a textbook on the Sale of Goods Act or on German grammar, and then, through the process of learning, undergoes deconstruction and reconstruction. Rumelhart, Minsky and Schank refer to changes in conceptual maps or frameworks, Aitchison to changes in word-webs, and Johnson-Laird to changes in our mental models. In any knowledge domain there are fuzzy edges (e.g. between subject-domain and non-subject-domain knowledge, examples and non-examples), many denotational and connotational options. All these may be interpreted or understood in different ways by different players in the discourse process, an area called the *hermeneutics* of discourse, and they may be affected by the context (the *pragmatic* factor). Boundaries may be determined by an 'expert' consensus, say, for the academic acceptability of an article on para-psychology or ufology, or for the advocacy of a controversial or exploded line of research (see Collins, Mulkay, and Whitley).

Types of knowledge interpenetrate, public and private, overt and tacit (when we know but do not know we know until it pops out). Examples abound from daily life. Jane knows Tom's phone number. Jack knows what to do if someone faints. Alan knows what it's like to be a father. Elspeth know that she is going to die. Bill knows he knows and wonders why being aware of simply being human causes him worry. Jane, as well as knowing Tom's phone number, knows a great deal about North Sea ecology and holds a doctorate in bio-chemistry. As a Guide leader, she also knows a lot about tents. These are not definably 'expert' or 'novice' or 'degree-level' *quantities* of knowledge, however much society recognizes that mechanisms like qualifications act as tokens of knowledge handling skills and mastery. Tom's wall has not fallen down in ten years which proves that he must know how to build walls: his knowledge of building walls would not be exhausted if he built twenty more walls and wrote three books about them. He can also tell anyone or everyone else without his own knowledge being exhausted (although there may be competitive business reasons why he might not!): in economic terms, his knowledge is non-exclusive, it has boundless externalities.

Knowledge and history

It is easy to fall into the trap of thinking that knowledge gets better as it increases, and that it gets better with time. Like the deficity model of education, this view assumes that knowledge is somehow 'there' to be unlocked, and that finding it in its discoverable state has intellectual and moral respectability. This is a popular sub-text in works covering the history of ideas: good ones usually reject what is commonly called the Whig view of history in which things get progressively better. This is a common view among present-day students when it is argued that for something to be true it has to be modern.

We find this view reflected in an interpretation of science which claims that the domain of knowledge known today as 'science' was virtually obscured from view in the ancient or medieval period: mankind had, it is claimed, primitive theories for explaining nature and fire and death, and limited language for representing its ideas in meaningful and shareable concepts. Advances are made, say, when Vesalius's *De Fabrica*, a study of the anatomy of the body which appeared in 1543, marked a break in traditional Galenic understanding of the subject and helped to induce a paradigmatic shift forwards to new knowledge. Advances (a revealing term in itself) in the eighteenth century gave scientists a new awareness of cell biology, so that still later scientists like Schwann and Virchow might 'arrive at' concepts and insights which go to form the basis of modern medicine (*see* King 1963, King 1982). This is the view of knowledge as an *evolving continuity*, an irresistible movement forwards and upwards to the present state of enlightenment.

It is easy to caricature the achievements and insights of the past with 20/20 hindsight. So, for instance, those doctors who were suspicious of Lister's ideas on the effects of bacteria on disease in hospitals are represented as obscurantists and reactionaries. Even if the historian of ideas adopts exemplary objectivity, there is a temptation for the reader to infer, from the chronological progression alone, that knowledge accretes incrementally and does not decay, even though there are travel writers like Paul Theroux to marvel at the ingenuity and magnificence of Incan architecture, and remind us of how beguilingly wrong is a developmental view of history. As well as the structures within which knowledge is presented (e.g. chronological) and the presuppositions and prejudices which modern readers bring to the construction and interpretation of texts, there is another critical factor. That is that the effect of the discourse itself, the meanings or *semantics* of discourse, and it is this aspect of discourse with which Foucault concerns himself (see below).

In his study of Victorian medicine, Youngson describes at length the rivalries and factual manipulations that occurred in contemporary medical correspondence. In it we find that writers assume that, for scriptural reasons, women *should* feel pain in childbirth and not have it mitigated through the use of chloroform, drawing on a theological frame of reference without which the modern reader cannot appreciate the viewpoint. Our view of history may be further distorted by the reliance of historians on the knowledge of privileged sources (e.g. the literate, the wealthy). Chance and fame compound this when we consider what texts have come down to us and what impact they have had on our understanding of historical periods – say, the novels of Dickens on our view of the Victorian age. The work of writers like the Opies, Punter and Bratton remind us how powerfully important events and intermediaries not only pass knowledge on to future generations but *filter* it in the process.

Modern readers may even miss the subtlety of the implicit theses of some of these influential writers: Carpenter argues that many late Victorian children's writers, like E. Nesbit and Kenneth Grahame, far from reiterating the 'Golden Age' nostalgia of the Victorian period, were hard at work parodying and undermining it. Fame itself can lead to critical evidence being relegated to the sidelines, such as the evidence from nineteenth-century journals on contemporary religious ideas (see Laqueur) which is far more complex that the view suggested by Trollope, Kingsley, and George Eliot.

Knowledge and history, then, are tightly bound up with each other. Amid all the obvious factors and influences, at the very heart of understanding (then, of then from the perspective of now) and of our understanding of understanding itself, lies the matter of *meaning*. This meaning appears partly in the knowledge and perceived truths of an age and partly, more microscopically, in the very texture of the discourse which an age evolves and uses to define its central concepts and perspectives. It is this area, arguably underlying many of the documentary meanings and institutional rhetorics of any complex civilization, which Foucault identified as being central to our understanding.

The order of things

Michel Foucault studied at the Sorbonne in the 1940s and 1950s, and worked as a lecturer and philosopher in Uppsala, Hamburg and Clermont-Ferrand. In the 1970s he was appointed Professor of History and Systems of Thought at the Collège de France. He wrote and reviewed for French newspapers, edited the journal *Critique*, and, with his first book called (in translation) *Madness and civilization* (1961), attracted international notice. *The order of things* (a translation of *Les mots et les choses*) followed in 1966, and *The archaeology of knowledge* (a translation of *L'archaeologie du savoir*) in 1969. Later he wrote authoritative studies of clinical medicine and the penal system, persuasively highlighting links between knowledge, discourse, power and the state. He died of cancer in 1984.

In the preface to *The order of things*, he speaks about cultural codes. Such codes govern language and perception, values, social exchanges and practices. He moves on to scientific theories and philosophical interpretations, which explain why order exists and what laws it appears to obey. Between the domains of codes and theories, he argues, there exists a middle area: 'more solid, more archaic ... always more "true"' than the theories which attempt to give expressions concrete and explicit form. Thus, he says, 'in every culture, between the use of what one might call the ordering codes and reflections upon order itself, there is the pure experience of order and of its modes of being'.

How, he asks, have cultures made manifest the existence of order? In what discourses have people articulated their reflections on this so that domains of knowledge have come into being. These are domains, not merely knowable subjects or objects which can be provided with labels (the words/things issue). Such 'knowledges' enable other knowledges to become knowable (particularly to us at some time in the future). So Foucault's inquiry is one 'whose aim is to rediscover on what basis knowledge and theory become possible; within what space of order knowledge is constituted; on what basis historical *a priori* ideas could appear, sciences be established, experience be reflected in philosophies, rationalities be formed'.

In this task Foucault is working towards what he terms an *episteme* for a particular period or age. Deriving from the word epistemology, which is the systematic study and analysis of warranted knowledge, his term episteme is defined as 'the total set of relations that unite, at a given period, the discourse practices that give rise to epistemological figures, sciences, and formalized systems within a culture'. Epistemes are developed by people defining things in forms of discourse. This is how we understand a culture. Foucault argues that the ways in which people define things in forms of discourse are central to our understanding of how and what people mean at various stages in history, underlying the interpretations of how knowledge advances, how knowledge elites form, and how institutional structures utilize rhetoric for their own purposes. In this way, then, *epistemically*, we come to understand that middle area between codes and theories. As Foucault is to say later in *The archaeology of knowledge*, the episteme is 'the totality of relations that can be discovered, for a given period, between the sciences when one analyses them at the level of discursive regularities' (see below).

He calls his enterprise 'not so much a history ... as an "*archaeology*"'. This word features in the subtitle of the book which is 'an archaeology of the human sciences'. To this end, Foucault contrasts the epistemes of the Classical Period in Europe (roughly the mid-seventeenth century) and the Modern Age (roughly at and from the start of the nineteenth century). Much of the book is devoted to applying the approach described above. This hinges on the notion that, in the Classical Period, coherence existed between three things or views: (1) of *language and representation* (i.e. that words represent things, reflected in the original French title of the book), (2) of the *natural orders* (reflected mainly through natural history, what later came to be called biology), and

(3) of *wealth and value* (that is to say, political economy).

In the Modern Period, these all change so that language ceases to be merely *representational*. Structures come to be conceptualized as organic and inorganic, and not merely as things found in the search for a comprehensive taxonomy. Similarly, the analysis of exchange and money 'gives way to the study of production'. It is not just that new or different words are being used to explain and represent the same concepts which existed throughout different periods of history. *The very concepts are different and are being redefined.* So there are crucial and pervasive links between discourse and concepts, between the how and the what of social meaning and exchange.

Foucault has reservations about traditional institutionalized historical evidence. Simply stated, we might characterize such evidence as made up predominantly of 'formal erudition' or 'erudite knowledge'. He contrasts this hierarchical approach to knowledge with what he calls *genealogies*. 'A genealogy should be seen as a kind of attempt to emancipate historical knowledges from that subjection [i.e. of the hierarchical order of power associated with science] to render them, that, capable of opposition and of struggle against the coercion of a theoretical, unitary, formal and scientific discourse'. This is based, he says, on 'a reactivation of local knowledges' or local memories. In this way, then, we might have 'a form of history which can account for the constitution of knowledges, discourses, domains of subjects, etc. without having to make reference to a subject which is either transcendental in relation to the field of events or runs in its empty sameness throughout the course of history'. (These quotations derive from chapter 5, 'Two lectures' and chapter 6, 'Truth and power', included in a collection of Foucault's interviews and other writings called *Power/Knowledge*, 1980).

Having introduced two complex new terms, 'archaeology' and 'genealogy', he differentiates between them in the following way. Archaeology 'would be the appropriate methodology of this analysis of local discursivities;, while genealogy 'would be the tactics whereby, on the basis of the descriptions of these local discursivities, the subjected knowledges which were thus released would be brought into play' (*Foucault*, 1980, p.85). He demonstrates a genealogical question: 'what kind of political relevance can enquiries into our past have in making intelligible the "objective conditions" of our social present, not only in its visible crises and fissures but also in the solidity of its unquestioned rationalities?' (*Foucault*, 1980, p.233). Then an archaeological question: 'how can the production in our societies of sanctioned forms of rational discourse be analysed according to their material, historical conditions of possibility and their governing systems or order, appropriation and exclusion?' (*ibid.*).

He emphasizes the importance of looking at society in the broadest way, his minimum thesis being that 'the historical matrix of conditions of possibility for the modern human sciences must be understood in relation to the elaboration of a whole range of techniques and practices for the discipline, surveillance, administration and formation of populations of human individuals'. We see this comprehensive approach to history, discourse and meaning in Foucault's analyses of sexuality, penal institutions and teaching hospitals. The breadth of his knowledge is astonishing and demanding. His works are not easy for, like those of Ruskin and Eisenstein, he keeps reviewing and redefining his ideas, in language that is in itself far from easy. In a short discussion of his ideas, only some of the main epistemological implications of his work can be described.

His attention to the episteme of an age, that underlying set of relations predicated by and implicit in the expression of the science and culture in a society, and to the genealogical way of getting round behind established discourses, alerts those at work in the information field to an important dilemma. Knowledge is organized information, and the process of organizing it, intellective and bibliographical, tends to make it hegemonistic. That is to say that, even though organized knowledge appears to be value-free, it is in fact impregnated with ideological and ethnomethodological connotations and interpretations that make it far from value-free. The knowledge domain exerts peculiar pressures on the cognitive and affective activities of intelligent inquiry, problem-solving and coping with our own known ignorance. Our very knowledge of knowledge influences what we regard as valid or warranted knowledge as well as how we conduct inquiries into new knowledge and accept or reject the knowledge and inquiries of others as intelligible or reliable or merely off-the-wall. Without knowledge of other and former research, it would be difficult to imagine many scientific advances. Without the bibliographical resources available today, it would be hard to see how some research could have taken place at all.

Foucault's point is that the very existence of a magisterial paradigm (in the sense that Kuhn formulated paradigms) has profound and largely undocumented effects on the *pre-conceptual* or *assumptive knowledge levels of discourse*. It is through such discourse that cultural and scientific activity expresses and exteriorizes itself. So the dilemma emerges as a dialectic between known knowledge and knowable knowledge, in which known knowledge needs to be created and presupposed to enable effective knowledge about exploring and creating new knowledge. And a second dialectic between *explicit knowledge*, embodied in systematic documentary firms using established forms of discourse and ratified by credentialized players (journal editors, the academic community, practitioners, professional bodies, institutions, policy makers, legislators), and *implicit* or *assumptive knowledge*, not only often tacit but often at work in helping to shape the very interpretations or constructions, linguistic/semantic/pragmatic as well as hermeneutic/phenomenological, by means of which the explicit knowledge gives rise to meaningful representations have made it a challenging task both to examine the epistemic character of knowledge *and* to stand outside the all-embracing canonical structures of content and procedure, so that the nature of knowledge, and how warranted and true it may be, can fairly be assessed (Brown, Belkin and Robertson, Otten and Debons, Monasterio, Wilson, Zuboff, Hannabuss).

Knowledge spaces and discourses

In *The order of things* Foucault teases out distinctions between the Classical Period and the Modern Period. His emphasis, like that of writers like Nagel and Kuhn and Schutz, is on the ways in which 'reality' is constructed from both objective and subjective elements. People construct such interpretations of their environment in order to make sense of them and to make decisions about their lives in them. To understand this social construction of reality it is important to understand 'resemblances'. These reveal themselves where interconnections exist and/or are made between different components of the knowable world and knowable knowledge. In the concept 'soul', for instance, there is such a resemblance in that the soul is situated in the body but the body is affected by the passions of the soul. *Analogy* is an important aspect of resemblances, as we compare stars in the sky with people thronging the earth, or compare and contrast plants and animals, or compare man (as microcosm) with the universe (macrocosm). Some concepts, like 'consonantia' and 'proportio', serve to establish links between other concepts.

In this way, then, resemblances may be regarded as an important device for enabling people to construct their *episteme*. People reflect upon their world, and use meanings and discourse to represent it epistemically. Even writing about epistemes becomes part of epistemic activity and reflection, since 'language partakes in the world-wide dissemination of similitudes and signatures'. Language 'must, therefore, be studied itself as a thing in nature'. Grammarians, lexicographers and etymologists adopt an epistemology in which language stands half-way 'between the visible forms of nature and the secret conveniences of esoteric discourse... It is a buried revelation and a revelation that is gradually being restored to ever greater clarity'.

These ideas and motivations underlie the efforts of many scholars to reflect encyclopaedic order in their study of language. Part of the hermeneutic (i.e. interpretative process) of language is that it reflects natural order. So the task of inquiry is to elicit parts of the as yet unrevealed table of nature. Interpretation is a major task for knowledge, one of its major roles, 'restoring the great unbroken plain of words and things... [and] making everything speak'. Commentary and legend alike predicated the 'sovereignty' of an original text which offered 'its ultimate revelation as the promised reward as commentary' 'by providing a foundation for the commentary' itself.

Language is 'a sign system that gave rise simultaneously to the search for origins... to the constitution of tables that would fix the possible combinations... that linked all knowledge to a language'. Interpretation of the signs 'opened up the field of concrete knowledge'. Here knowledge (called 'mathesis') is equated with a science of calculable order, implying the existence of a grid of kinships defining the general configuration of knowledge. Such grids of kinships were demonstrated in works like Linnaeus' classification or 'taxinomia universalis'. As Foucault states: 'the limit of knowledge would be the perfect transparency of representations to the signs by which they are ordered'. The fundamental task of classical discourse, then, is 'to ascribe a name to things, and in that name to name their being' (*Foucault*, 1966, p.120).

There are parallels in information retrieval and management. Farradane's work on representing concepts and subjects by unambiguous terms, in particular his efforts to link operators to cognitive mechanisms, demonstrates the search to ascribe names to things and order them, linking knowledge to language. Ordering has been taken further by Sparck Jones who, in her work on specificity and relevance weighting in retrieval, and, in the different sphere of linguistics, by Hutchins' work on the paradigmatic and syntagmatic structures implicit in indexing languages. Vocabulary control and thesaural displays are two further exemplars of this process, as are, with varying degrees of subtlety and naturalism, the classification schemes used in libraries.

Foucault continues his analysis of the order of things by saying that 'it is by this means that structure links the possibility of a natural history to the mathesis. In fact, it reduces the whole area of the visible to a system of variables all of whose values can be designated, if not by a quantity, at least by a perfectly clear and always finite description'. The effect of this is that plants and animals are seen more for the 'visible patterning of their organs' than for their organic unity. It is a bringing together as multifarious variables 'without any internal relation of subordination and organization'. In short, that is 'why natural history, in the Classical period, cannot be established as biology. Up to the end of the eighteenth century, in fact, life does not exist: only living beings. These beings form one class, or rather several classes, in the series of all the things in the world' (*Foucault,* 1966, pp.160-166).

By the same token, political economy started with concepts like 'wealth' and 'exchange'. Concepts like money and price, value and market were part of a formal *analysis of wealth*. Economics *meant* handling prices and commodities. In order to represent prices, commodities had to be precious, useful, valuable in themselves (i.e. to be representational). The pivotal semantic and referential relationships here are clear: in order for there to be value and wealth, there must be exchange. This implies a superfluity which someone else needs. When exchanged, this superfluity becomes a commodity. I have no wealth unless my superfluities can be converted into commodities.

Foucault is keen to emphasize that only in the contemporary setting of mercantilism can this model of wealth (as he calls it '*ur*-economics') be properly understood. His argument is subtly semiotic when he speaks of such merchant classes representing wealth in this way, and when he reflects on how, in doing so, they are in turn represented by their wealth. 'Through the mercantilist experience, the domain of wealth was constituted in the same mode as that of representations'. Such representations could 'open within themselves a space in which they could analyse themselves ... making it possible to establish both a system of signs and a table of identities and differences'. His discussion (in *Foucault*, 1966, chapter 6) deserves full and attentive reading. Of course, the whole analysis demonstrates an archaeological approach at work (in his meaning of the term!).

Changing spaces

We can detect or elicit features which are common to domains like general grammar, natural history, and political economy. Just as in discourse verbs predicate relationships between the elements of the proposition, so notions like 'value' predicate relationships between (in this case, economic) factors (like exchanges and needs). In this way there is an articulation of what is represented (e.g. in language, names are given to things, in economics, exchanges are identified and carried out). In the same way, in natural history, we define the structure of beings. Similarly, we may designate one representation by means of another, as when we represent 'value' by the 'pledge' of 'money'. We may even derive a representation, as when we use a trope, say a metaphorical expression like the commodification of talent or the prostitution of genius.

Because information science is concerned with signification and referentiality, there are strong resonances for it from Foucault's work here. Signs represent ideas or concepts, and, under the widely held information-processing or cognitive paradigm of knowledge representation today, these signs usually in the form of word-labels are organized in rational patterns. Such patterns include grammar and syntax, conceptual maps and hierarchies, associational nets, cohesive domains of substantive and procedural knowledge characteristic of expertize (and expert systems), and databases. It is assumed, too, that meaning can be fairly and accurately and consistently represented, and that names have epistemological and positivistic or naturalistic verifiability. Into this we can import an *axiological* dimension, which concerns itself with the values and belief-systems of the knowers and knowledge-organizers. Axiological features show through in two ways: (1) where opinion and judgement are built into knowledge-handling procedures and (2) where subjective or connotational or socially-contextualized meanings (e.g. in the area of gender politics) are represented in ostensibly objective arrays.

The process of naming or referring, so fully discussed by philosophers of language like Wittgenstein and Frege, Austen and Carnap, is the ultimate setting for mainstream information tasks like classifying and using subject headings. These tasks are taxonomic and heuristic acts of attribution (representing something by something) and designation (representing something by something other, e.g. value by a pledge of money). It is but one step more to define 'derivation' itself. Foucault's own example is the act of implying the price of commodities when we speak of 'trade'. Derivation exists in and through these forms of representation. By extension, he argues, we might use a trope (a figurative expression, such as a metaphor, or an oblique expression, such as irony), as might emerge if someone said that X had made his money from 'trade', or when we speak of 'coining' a new word.

An encyclopaedia could be used to represent organized knowledge, or a library itself become a metaphor (as it does in Eco's novel *The name of the rose*), or where we are invited hypocritically to consult someone else as the 'real expert' in a subject field. Such elements of meaning and discourse are *articulated* because relationships are revealed, between a name and a thing, or between broader and narrower terms, or between a newly-understood fact and the emergingly coherent map of prior cognitive knowledge. In terms of syntax and grammar, between propositions and claims; in logic, between premises and entailments or implicatures; and in documentation, between information retrieved by and/or/not strategies (Morris, Steinberg and Jakobovits, Otony, Shapiro).

It is worth examining what is happening here. First, Foucault has set before us three domains of human experience and inquiry which reveal, he claims, the very episteme of the Classical period. Second, he describes them not as 'closed totalities of meaning' but as 'incomplete, fragmented figures' in accordance with the dispersion of an exteriority (i.e. not just as intention or a subject). He is describing groups of statements 'in order to rediscover not the moment or the trace of their origin' (as would the historian of ideas) but '*the specific forms of an accumulation*' (*Foucault*, 1969, chapter 4). This latter is what Foucault calls a 'positivity'. And third, he is analysing a discursive function, that is today, dealing with 'a group of verbal performances at the level of the statements and of the form of positivity that characterizes them' (*ibid.*). In doing this, he is both experimenting with the 'archaeological' approach to history and at the same time amplifying his thesis that, through analysis of discourse, the 'genealogies' themselves become apparent and clear to the reader.

Moving into the nineteenth century, the so-called Modern Period, this paradigm changes for complex reasons, some of which he discusses. In brief, the presuppositions about *order* get eclipsed and replaced by a notion of *history*. The ways in which discourse has order empiricity up to that point (e.g. order, exchange, etc.) get supplanted by different positivities, notably that of 'labour'. This arises in and because of the work of Adam Smith. 'Labour', he claims, is the real measure of the exchangeable, which itself is redesignated into the production process. Traditional assumptions about exchange and needs disappear. The process of exchange continues *but the ways in which it is conceptualized change*, particularly because labour is employed as a measure of the order. In the same way, increasing knowledge about the organic and inorganic structures of the universe encourage a parallel paradigmatic shift in natural history, which brings it more in line with what we, in the twentieth century, conceptualize as biology. Phonetics and semantics, too, change the episteme of general grammar into linguistics. What we find, then, is a modification of knowledge itself as 'an anterior [i.e. pre-existing, i.e. assumptively warrantable] and indivisible mode of being between the knowing subject and the object of knowledge' (*Foucault*, 1966, chapter 7).

Typically, Foucault takes on board many important influences from the history of ideas, such as the scientific work of Cuvier and the linguistic research of Bopp and Grimm. This is characteristic of Foucault: operating on the archaeological level of analysis compels him to move among and through the privileged, canonical historical and historiographic source materials to locate his prey, epistemic meaning. Then, at that stage, he can reflect on its implications for mathesis (or knowledge).

The modern episteme can be seen at work when we examine the concept of 'man'. 'Man' is a being which/who recognizes himself in the representation of nature but is never to be found in the table of order himself since 'he is a primary reality with his own density... As a difficult object and sovereign subject of all possible knowledge, he has no place in it'. Man is, then, both an object of knowledge and a subject that knows. This entails the conclusion that knowledge becomes immeasurably more complex when we include *reflexive* knowledge. Man then becomes 'in the analytic of finitude, a strange empirico-transcendental doublet... a locus of misunderstanding... that constantly exposes his thoughts to the risk of being swamped by his own being, and also enables him to recover his integrity on the basis of what eludes him'.

In this spirit, Foucault, and readers who have followed him thus far, are ready to consider how these changing patterns of interpretation operate in fields characteristic of mankind's transition from the Classical to the Modern episteme. Among these patterns we can include clinical medicine and penal institution-alism, which are both focal points for his own research in later works (*Foucault*, 1966, pp.246-8).

The archaeology of knowledge

Foucault was sceptical about relying too much on the tradition monuments to knowledge. Such monuments tended, he claimed, to imply a false historical continuity. Seeing history through such continuities was a temptation and a distortion of the facts. A false unity might emerge or be implied, in, say, subject fields like medicine and political economy. Accordingly he resisted 'placing himself inside' such traditional monuments of knowledge so that he could study them objectively and the facts and truths beyond them objectively. He wanted to 'rediscover beyond the documents themselves the intention of the speaking subject, his conscious activity, what he meant... [and] reconstitute another discourse... re-establish the tiny, invisible text that runs between them'.

These remarks appear at the start of his work *The archaeology of knowledge* which appeared first in French in 1969. He develops his argument by suggesting that we can all too easily assume, when we talk about social phenomena, that the meanings and usages given to key concepts in a past period are the same as that given today. The example he uses is 'madness'. If we assume that meanings then are meanings now, then we wrongly assume a continuity of meaning, a unit in the discourse dealing with madness. We cannot assume that, he argues. On the other hand, 'if there is a unity in the discipline, it is in the procedures, observations, practice, regulations' rather than in the statements and concepts (so we might find that social concern about what to do with mad people, then and now, will be more comparable). Similarities between concepts and themes then and now are, then, merely ostensible, and they are also expressed in *different discourses*. He sees his aim as defining 'these objects without reference to their ground, the foundation of things, but by relating them to the body of rules that enable them to form as objects of a discourse and thus constitute the conditions of their historical appearance'.

So the discourse about madness, which turned eventually into the discourse of psychiatry, is 'characterized not by privileged objects, but by the way in which it forms objects that are in fact highly dispersed'. Such a discourse will have many primary relations, such as historical facts, causes and teleologies, and secondary relations, such as what nineteenth century doctors happened to have said about their work. Beyond that exist discursive relations 'not internal to discourse', not connecting concepts or words with one another or establishing deductive or rhetorical relationships between propositions. They are 'at the limit of discourse', offering it objects of which it can speak or determining the group of relations 'that discourse must establish in order to speak of this or that object, in order to deal with them, name them, analyse them, classify them, explain them'. Foucault calls them 'preconceptual levels' at one point (*Foucault,* 1969, pp.60).

We have seen, in *The order of things*, that such discursive relations are exemplified in the themes and strategies implicit in representationalism (in the classical episteme of general grammar) and the analysis of wealth (in its episteme about political economy). There too, Foucault was keen to set such discursive relations in a credible context of history (respectively, those of teaching and of mercantilism), and to extrapolate and infer that factor of change which is intrinsic to both history and language.

'Everything is never said' (*Foucault,* 1969, p.118). He argues that the statements which we do find are rare in the setting of what is not said. The positivity of a discourse lies beyond the *œuvres* that historians find which define a merely 'limited space of communication'. His comments not only query the over-dependence of historians of ideas on privileged or over-exposed documents. They also shed sceptical light on our reliance on bibliometric information, with its core and marginal documents, and its quantitative claims, as a true reflection of an age and its ideas. Epistemically, then, the assumption that a domain of social knowledge is truly represented by articles in key journals, or by detectably magisterial historiographic trends within a body of textual materials, are both suspect when applying Foucault's archaeological approach, with its emphasis on preconceptual discursivities. Simply, *cherchez l'assumptive.*

The discipline of traditional information studies has familiarized itself with at least two approaches which run counter to Foucault's argument. His view is that a domain of knowledge is not, and not exclusively, reified (i.e. represented as a real thing like a document, journal article, citation) in magisterial (i.e. mainstream) discursive formations (i.e. documents, sources, etc. recognized by established or even establishment opinion, accepted substantively and procedurally as being acceptably within the professional knowledge paradigm, represented in recognized bibliographic and critical apparatus). Such an approach is typified by citation analysis, presuming as it does that ideas are represented in documents and *a fortiori* that those documents, when their citational relationships are analysed, form valid representations of the intellectual structure of a particular field. McCain, for instance, has mapped the literature of genetics in this way, using multi-dimensional scaling and cluster analysis, while White and Griffith argue that authors are 'markers of intellectual space', drawing on the methods of co-citation.

The other approach is based on the view that users learn through learning (including using libraries, retrieving information and so on), and that the very process of information-gathering shapes both coming-to-be-known knowledge *and* the heuristic and meta-cognitive strategies by and with which the learner inquires further. The view draws on ideas by educational theorists like Gagne and Ausubel and Bruner, and we find it taking a more practitioner-based approach in fields like user education, reference inquiry work, and online searches. More interesting still is the claim that, by means of the retrieval process, and only because it exists, *undiscovered public knowledge* can become known (Swanson). Swanson argues that such information retrieval plays an important role in facilitating discoveries in what Popper called World 3 (i.e. the world of objective knowledge, World 1 being the physical world and World 2 the world of subjective knowledge or experience). World 3 knowledge is imperfectly mapped by retrieval systems and by mainstream documentation, Swanson claims, yet even so can greatly assist in the growth of knowledge. He cites evidence of black swans and missing links in epidemiological research as examples where the use of organized scientific literature has led to further scientific discoveries.

Both these approaches make assumptions about conceptual and pre-conceptual knowledge which Foucault invites us to review. He chooses not to place full reliance on 'a unitary, formal and scientific discourse'. To this end, therefore, he encourages us to adopt an archaeological stance, using genealogies and paying attention to the ways in which groups of statements accumulate. The process of accumulation is similar to Schutz's 'sedimentation' of ideas. When we then analyse the positivities, we are aiming to show 'in accordance with which rules a discursive practive may form groups of objects, enunciations, concepts, or theoretical choices'. He is careful to distinguish between these and knowledge (*savoir*) as such: positivities are not doublets of established disciplines or sciences, nor do they define states of knowledge at any given time. They are not defined structures like sciences nor knowledge piled up from heterogeous sources. Positivities *form the precondition of what is later revealed and which later functions as an item of knowledge or an illusion, an accepted truth or an exposed error.* A positivity is '*a group of elements that would have to be formed by a discursive practice if a scientific discourse was to be constituted, specified not only by its form and rigour, but also by the objects with which it deals, the types of enunciation that it uses, the concepts that it manipulates, and the strategies that it employs' (Foucault,* 1969, p.182).

In other words, archaeology, in Foucault's meaning of the word, looks for the formations and permeabilities of discourse and defines 'the operators by which the events are transcribed into statements'. He continues:

> It does not challenge, for example, the relation between the Analysis of Wealth and the great monetary fluctuations of the seventeenth and early eighteenth centuries; it tries to show what, in these crises, could be given as an object of discourse, how those crises could be conceptualized in such an object, how the interests that were in conflict throughout these processes could deploy their strategy in them. (*Foucault,* 1969, p.167).

In this way, then, archaeology is different from the history of ideas: the first looks at discourses, while the second examines the boundaries and genesis of knowledge, implies linearities and continuities,watches techniques emigrate and grow (*ibid.,* p.138). The archaeological approach asks us to consider 'those discursive practices to which the facts of succession must be referred', if we are not – in a naive way – to give unwarranted status to ideas and arrange them in some crude order of merit. What the approach seeks, then, 'is not to draw up a list of founding saints but to uncover the regularity of a discursive practice'. Foucault applied it in works like *Madness and civilization* and *The birth of the clinic.* The major conceptual elements of the approach are brought together in *The archaeology of knowledge* (pages 160-161) when he discusses isomorphisms and models, shifts and correlations, and integrates what he has to say about positivities with his ordering theories using attribution and articulation.

Drawing on writers like Schwab and Kuhn, as well as looking at Garfield's work on citation, might encourage us to believe that knowledge in a particular age was coherently represented in its privileged documents, and that bibliographically organized and cited information links the elements of knowledge together in a neat teleological manner. The very clarity with which the history of ideas orders and presents intellectual change and scientific discovery can lead to this view. Foucault does not deny the importance of documentary evidence in historical research, or the hegemonistic way in which such evidence influences as well as reflects the history of ideas. Yet he is keen to point out that scientific domains are *not* archaeological territories as such, and to alert us to the risks of equating knowledges with sciences, and both knowledges and sciences with epistemological sites. 'What, in the Classical period, was offered as the medical knowledge of diseases of the mind occupied a very small place in the knowledge of madness: it constituted scarcely more than one of its many surfaces of contact (the others being jurisprudence, casuistics, police regulations, etc.)'.

In any discursive formation, Foucault argues, 'one finds a specific relation between science and knowledge', and

> instead of defining between them a relation of exclusion or subtraction (by trying to discover what in knowledge still eludes and resists science, what in science is still compromised by its proximity to and the influence of knowledge), archaeological analysis must show positively how a science functions in the element of knowledge (*Foucault,* 1969, p.185).

This is what he claims to have attempted, through his analysis of grammar, natural history, and political economy, in *The order of things* and *The archaeology of knowledge.*

The birth of the clinic

In 1963 Foucault published a study of clinical medicine and the teaching hospital called *Naissance de la clinique.* It shows his analytical method in action. He reflects on how easy it would be to assume that people had been ill throughout the ages, that illness is illness is illness, and that making people well again is the task of doctors. We might accept that, once upon a time, doctors used peculiar methods (like leeches), and that nowadays hospitals are more hygienic places than long ago.

Yet for Foucault the starting point is the notion of where illness is *spatialized.* In the human body, we might say, of course. But Foucault asks how that concept is *seen* by people in the Classical period. He suggests that they conceptualized (and pre-conceptualized) in a thought-world of ordered resemblances, like the naturalists we considered earlier who regarded taxonomizing as an important commitment to knowing. In the Classical period nosologies (or systematic classifications of diseases) were common: their existence predicates the existence of *pre*-conceptions about what disease itself was. The Foucaultian interpretative approach to 'disease', therefore, is that it *occupied spaces and, from time to time, in states of illness, occupied a man or a woman.* The individual was – tacitly – 'subtracted from the qualities of the disease'. The effect of this on doctors (if we can accept for now that the concept 'doctors' is itself in need of refinement) was to consider disease as *distinct from and well as transitionally located in* the patient.

Change arises, he claims, when we move from what he calls the medicine of classes to the medicine of epidemics. The first entails deciphering the type of disease, and determining its place in a hierarchy of diseases. This is a restricted knowledge space, confined within the structure and thinking framework of a nosology. The second relies upon analysis of diseases regarded as a series, taking into account factors like causality and localization. The second is a much broader knowledge space than the first. It allows for the concept of the 'healthy man or woman' (*Foucault,* 1963, p.34), a concept which it is easy (and wrong!) to believe has been in existence and the same since the days of Homer.

Foucault then adds to this picture what he calls a *free field.* Exemplars of free fields are political ideology and medical technology, hospital structures and doctoring procedures. In such domains, he claims, we can infer a coherent view of how the *discourse of disease* has changed. Accepting that there have been many external events to induce change in hospital practice, notably changes in the training of doctors, and that some of the catalysts of change were associated with European-wide intellectual movements (like the libertarian ideals which characterized the French Revolution), Foucault cannot bring himself to declare, simplistically, that medicine was 'born' at, say, the end of the eighteenth century. A more accurate definition is to say that the 'grid according to which experience [was] given, articulated into analysable elements' found an effective discursive formation. As the treatment of disease was institutionalized in the clinic format, knowledge ceased to be represented as 'knowledge of cases', even if multiplied many times. The clinic was a new domain which was regarded as conceptually central to understanding the scientific coherence and political validity of the state. This was so because the state was closely implicated with the general perception (a knowledge paradigm in its own right) that, for a healthy population, disease would be kept under control and that institutions for that purpose would deal with it.

In addition to that, a conceptual transformation occurred because doctors changed from seeing disease as something to be fitted into a code to regarding it as a *diversity of medical factuality, based upon a plurality of observations* (*Foucault,* 1963, p.97). Once again, it is hard for modern readers to believe that this change was ever necessary, since we can so easily make the assumption that doctors have always relied upon observation and analysis. What Foucault is telling us is that things are not as simple as that. 'The combinative variety of the simple forms constitutes empirical diversity'. New cases do not disturb establish truths but can be 'grasped and recorded for themselves'. The 'new intelligibility' is crucial for understanding the development of clinical medicine into and beyond the nineteenth century (the 'Modern Period').

Later, of course, knowledge of disease increased as a result of further research in anatomy, pathology and psychiatry, and as a result of a more complete understanding of the effects of bacteria on organic life (Youngson and King). What remains for the reader, after taking on board what *The birth of the clinic* has to say, is a strong sensation that, whatever mainstream medical history teaches us about the growth of modern science, it is equally important to recognize how particular domains of knowledge arose and became structured. Above all, how these domains were utilized in understanding and defining the very knowledge spaces which doctors had of disease itself, of the patient, and of the increasing institutionalization of medical work and practice.

Discipline and punishment

It is unlikely that most modern readers would believe that criminals were very different two hundred years ago from what they are nowadays. All people, we might say, who offend against society are guilty of particular anti-social behaviours and should be punished, made to recognize their deviance, or rehabilitated. Once again, Foucault reminds us that the process is not so simple, alerting us to the effects which conceptual and *pre*-conceptual knowledge have on encouraging us to think this way. In his study of prisons called *Surveiller et punir: naissance de la prison,* translated in 1977 under the title *Discipline and punish,* he turns to these issues.

The body has traditionally been the major target of penal repression. Up to the eighteenth century, torture was commonplace and often public. The accusers of the prisoner had the power, and therefore they held the 'truth'. The prisoner was expected to accept guilt as truth (a paradox implicit in the rationale of the Inquisition). Torture was a judicial game, a ritual and a spectacle: 'it was the task of the guilty man to bear openly his condemnation'. Through execution, the power of men (and indeed of God) was shown in action. Ritually, death was integrated with the acceptable and 'gave a meaning to its permanent aggression'. Foucault suggests that this is an example of 'powerful discourse' in which notions of language, truth and power interpenetrate. The authorities in a state, centred on the monarch and the church in historical times, treated the condemned man as their own property, as *mere* property.

As a result of the Enlightenment and much else, penal behaviour went private, moving from public spectacle to secret execution within an institution (typified above all by the electric chair). Part of the discursive change here is from 'festival' (the public execution) to 'school' (where criminals were institutionalized and subjected to a strict regime intended to punish and reform them). The change reveals important shifts in conceptual and pre-conceptual meanings about *punishment.* Crime should indeed be punished but how it was achieved is increasingly based upon the notion and process of *correction.* This in its turn was based on notions of *fraud* rather than *blood,* since crimes were increasingly regarded as having been committed against the *economic and social structures of the state* rather than simply against the person. We see a change in the semantic frame within which crime and punishment are being defined and administered. Linking meaning with institutions and with power, Foucault suggests that the process is ideologically charged, as growing bourgeois power invades and shows itself through the procedures of – *and the presuppositions of* – punishment.

Notions of humane punishment (e.g. using discipline, strict regimes, continual surveillance) become influential, evidence of the changing paradigm of meaning in this knowledge domain. Economic motives increasingly pervade institutionalized punishment, too, since prisoners can then be put to productive employment, and funding for prisons gets seen as an economic and fiscal choice for the state. The actual body of the prisoner (*Foucault,* 1975, p.109) is now regarded as public property.

Indeed, the concept *prisoner* begins to replace the concept *criminal* as a cognitive label for the subject of the punishment. Institutionalization both individualizes the prisoner into a 'case', and totalizes the prisoner into a mere element in a large corrective mechanism. Under penal justice, *prison* is transformed 'from primitive procedure to penitentiary technique, and there is a powerful agenda of the correction of delinquency which, by definition, seems to undermine the ordered fabric of society which reacts humanely by providing appropriate institutions for punishment'. The discursive and archaeological methods used to analyse penal change still need to be used today, since debate in the public sphere (e.g. the professions, the media) reflect changing knowledge, explicit and assumptive, public and private. Liberal and puritan interpretations can be inferred from many areas of public discussion (e.g. with regard to nudity in television advertising, the alleged harms caused in computer pornography, issues of care in the community, and the scope of the police in a free society).

The power of knowledge

In his later work, Foucault comes more and more to emphasize associations between knowledge and power. This connection has been clear in what he has said about the history of ideas, in particular expressed through his scepticism about putting too much faith in canonical (i.e. accepted) knowledges disseminated by privileged sources (especially within a power-orientented political and institutionalized structure like modern society). This connection between knowledge and power emerges strongly when he argues that the discourse of political economy began to change in the seventeenth and eighteenth centuries owing to the growing power of mercantilism and the bourgeoisie. This theme is developed in his study of penal reform, particularly when he argues that 'authority' in the form of monarch or state or church have not just the power but also the 'knowledge', and can 'create or establish' the knowledge so that it becomes the 'truth'.

Knowledge is imbued with power when it is embodied in professional groups or cadres. Such groups claim particular forms of authority and therefore truth (e.g. standards of entry and training for the profession, standards of behaviour represented in codes of conduct). Foucault associated the growth of institutionalized punishment with a parellel growth in the police force. Knowledge is *legitimized* as well as *institutionalized,* and studies of patriarchal (e.g. feminist) and hegemonistic (e.g. dominant ideology) discourse continue to multiply and provide ever-increasing insight into the constructed meanings inherent in communication and information language. At its extreme legitimized or self-legitimizing authority insists and legislates on particular kinds of knowledge, enabling the dissemination of 'official' or preferred information, identifying other kinds as deviant or marginal (e.g. the representation of minorities in communication discourse) and even controlling their production and dissemination (e.g. examples of 'official silence' over environmental damage abound).

In information work there are interesting connections between knowledge and power. One over-arching example is the link between the successful development of an information policy and infrastructure, and economic well-being. Writers such as Jequier and Lyotard offer relevant explanations into the importance, above all in a post-modern post-industrial culture, of economic intelligence, and others have identified the world-wide economic implications of media conglomeration and concentration, and information-rich and information-poor societies. The dominant ideology thesis itself hypothecates that powerful interest groups in society, particularly successful elites over over-classes in capitalistic economies, recognize the importance of ideological discourse in sustaining their material power.

Fowler, Dant and Van Dijk are three writers of many to analyse the ways in which ideological meanings impregnate communication discourse, while writers on media representation (like MacDonald on ways in which women are represented in the media, and Schlesinger and Ericson on the ways in which media news 'puts reality together') highlight ways in which misrepresentations (e.g. the disabled as a 'problem', women as primarily decorative, macho images of masculinity, right-wing views of industrial relations, conceptions of fairness and balance in political interviews on television). Many factors from financial stringencies to institutional quality assessment reviews are encouraging academic communities to identify those species of publications and documentary outlets which earn the greatest prestige, earn the most points, thus commodifying knowledge and firmly linking knowledge with commodity, commodity with prestige, prestige with security of tenure, tenure with membership, membership with authority, and authority with truth.

This is a typically Foucaultian concatenation of concepts, firmly placing concepts in a real social context, and acknowledging the place in the conceptual framework of assumptive knowledge. Much of the assumptive knowledge, moreover, is axiological, in the sense that it evokes and demonstrates the *valuation* players place on their knowledge activities, know they are expected to place on them, and the extent to which knowledge of preferred orders of knowledge (say, in core journals, in masonically privileged inner-circles) becomes criterial in the process of intellectual reflection. Even the assumption of gate-keeping and peer-review is one that should, in Foucault's terms, be scrupulously examined.

Foucault's work is subtle and demanding. He moves in a multi-disciplinary way and focusses his attention on complex domains of knowledge. He employs complex domains of knowledge to explain these domains, using specialized and personal terminology in his analysis. His work is always learned and stimulating, and there have been many different reactions to it, from scholars in fields as diverse as history and medicine, penology and philosophy, morality and linguistics, cultural anthropology and epistemology. He also changed and developed his ideas in the course of his life, although in this discussion these have been kept to one side.

Always he comes back to the subject of *discourse*, a matter which has assumed a critical importance in our current understanding of meaning, communication and information-handling. As he states in a postscript to an essay on Roussel (a late interview from *Power/knowledge,* 1980):

> it is the interest I have in modes of discourse, that is to say, not so much in the linguistic structure which makes such a series of utterances possible, but rather the fact that we live in a world in which things have been said. These spoken words in reality are not, as people tend to think, a wind that passes without leaving a trace, but in fact, diverse as are the traces, they do remain. We live in a world completely marked by, all laced with, discourse, that is to say, utterances which have been spoken, of things said, of affirmations, interrogations, of discourses which have already occurred. To that extent, the historical world in which we live cannot be dissociated from all the elements of discourse which have inhabited this world and continue to live in it as the economic process, the demographic... Thus spoken language, as a language that is already present, in one way or another determines what can be said afterward either independent of or within the general framework of language.

His work is seminal in linking knowledge with history and with power, taking explicit knowledge paradigms into ideological and assumptive domains, and illuminating the complex cross-fertilization between ostensibly disparate areas of academic and professional expertise. His search for epistemic truth incorporates both paradigmatic and warranted knowledge, as well as exploring what is assumed before we know we know and think we know. Meaning and discourse change with time, ideologically charged, catalysed by power mechanisms in society and culture, many of them institutionalized. It is impossible fully to understand knowledge management in the modern age, and the infinite variety of information-gathering behaviours observed in information work, without acknowledging the intellectual heritage of Foucault's work.

Glossarial note

Terms used by Foucault often take on specialized meanings. *Archaeology*, for example, is differentiated from *history* because of his wish to investigate *pre*-conceptual knowledge and get behind the *canonical* (i.e. officially established, consensually sanctioned) knowledge typified in established texts. The discussion in his book *The archaeology of knowledge* illustrates his approach in action. He recommends the use of the term *genealogy* (see the section on *The order of things* in this paper). Using the genealogical approach, he attempts to emancipate historical knowledges from subjection to a unitary, formal and scientific discourse, and 'reactivate local knowledges' (compare the work of Geertz).

He believes that the researcher should avoid being deceived by the simplicity of ideas appearing to come into being 'at a moment of history' recorded by a text, which then acquires increasing (and arguably spurious) authority through extensive citation. He recommends that we examine the *actual* meanings 'in period', for example in fields like psychiatry and punishment. Not even the signs for things can – semantically, conceptually, pre-conceptually – be taken for granted as being the same as those in our own time. Words are the signifiers for meanings, and many meanings are concepts. Such words join (semantically, grammatically, propositionally) in order to express and explicate ideas and areas of knowledge, and can be elicited and identified by researchers as part of a continuity of expressiveness in the form of propositions and statements. Such groups of statements are called *positivities*, and, as part of the fabric of discourse (called *discursive formations*), signify and represent and allow for the construction of culture and science.

The total set of relations uniting these discursive formations or *practices* (as they become when they characterize a group or when they are used to represent significant meanings in social exchange such as in political economy, medicine, or indeed any important profession), at a given period of history, is called an *episteme*, which has given rise to epistemic or warranted knowledge. The term derives from *epistemology*, the formal study of warranted knowledge. Epistemic discourse is revealed and made intelligible in and through domains of knowledge like the sciences, humanities and arts, indeed any formalized system within a culture. With this critical and conceptual apparatus, we are able, Foucault argues, to analyse knowable history by examining discursive formations, acknowledging at the same time the pervasive influence of social and ideological formations *and* the phenomenological complexity of the self, the being or entity creating (as it believes) the illusion of meaning and truth.

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More than just a name: the art of prospect research

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Abstract

Prospect research aims to provide all the information necessary for the solicitation process (i.e. asking a potential donor for a gift), from compiling lists of names in the first instance, to building up an in-depth profile of the prospect. There are a number of resources available to the researcher, including biographical books, newspapers and magazines and electronic media such as online databases and CD-ROMs. In addition to researching individuals, companies and trusts in the United Kingdom and possibly the United States, the prospect researcher in Britain is increasingly being asked to investigate prospects around the world, to provide country profiling, as wealthy individuals become 'citizens of the world', rather than just one country, and as British charities begin to look overseas for donors.

Introduction

Oxford University Development Office (OUDO) was set up in 1987 to raise money for the university. In October 1988 it launched a major fund-raising drive, Campaign for Oxford, whose object was to raise £220 million over a five-year period. After considerable success over the first three years, the target was raised to £340 million over six years. The money is required to finance new and existing academic posts, projects and facilities, and thus help to ensure that Oxford continues to rank among the world's leading universities. OUDO is at the forefront of University fund-raising in the United Kingdom, and follows the American pattern of employing a large, professional department of specialists. The research section is therefore unusually large and well-resourced by British standards. Its purpose is to provide all the information needed to support the solicitation process, and although the section concentrates upon writing reports on potential donors capable of making large gifts to the university, it also produces short briefing notes and answers a wide range of general queries.

Matching specific projects to prospective donors: selling the concept and making it relevant

Mass mailings will always have their place as the backbone of many successful fund-raising campaigns. They are a useful if somewhat blunt tool for reaching a large audience of either actual or potential donors. But the personalized approach is generally more effective, although usually only cost-effective for the top tiers of donors who are capable of making major gifts. Such gifts will have a substantial impact upon the success of the campaign. The super-rich are accustomed to a more personal approach, especially as a growing number of charities employ it. More competition between charities for the potential donors means that approaches must be more sophisticated, i.e. directed towards needs and interests of the particular individuals.

In order, therefore, to target specific people, more than just their names are needed. It is important to understand them as individuals, their background, their giving history, their hopes and interests, and their contacts if any with your organization. This is where prospect research comes in. Prospect research aims to flesh out a name, making such personalized approaches possible, enabling projects to be donor-led.

Personal information is therefore needed – on the prospects, their family and friends, the people who influence them. The researcher will need to trace contacts with the charity: whether directly, in Oxford's case for example, having attended Oxford, or having a child or parent who has; or indirectly, where friends or business colleagues are graduates. In terms of the motivation for giving, a reason why they would consider giving to the charity is needed, especially if there is no direct link. For example, if it is a medical charity, the fact that a family member is or has suffered from the condition is relevant; if it is a museum or cultural institution, then the individual might be a collector with a particular interest in one of the exhibits or collections. (Donor motivation is a wide area, and one it is not possible to go into in any detail here.)

Prospect research will aim to provide information in as many of the following categories as possible:

- Address and telephone number/fax. This may be obvious but it is also necessary. In addition, it can also be a guide to wealth, in terms of area, if there is more than one house, etc. If the prospect is ex-directory, then other sources, such as biographical books, electoral rolls, newspaper or magazine articles, may be needed to help track the prospect down.
- Wealth and giving potential. This is one of the hardest, yet most important sections of the report

and is vital if the ask is to be pitched correctly. (For more detail on estimating wealth, please see below.)

- Biographical information. This includes age; education; family: spouse, children, parents; relatives.
- Career. If details of current and past positions can be found, this section is often a useful source of contacts.
- Gift history. Where known, the gift history is an important clue to the person. For example, the style of giving, whether ad-hoc, covenant, in response to a mailing, the size of any gifts, the recipient. This information may come from the charity's own mailing list, or other sources such as newspapers, magazines, books, or word of mouth.
- Contacts with the charity. As explained above, these may be either direct, that is the prospect or a member of his/her family is involved with the charity; or indirect, where the prospect is a friend of someone who is involved, or is in the same club, or works with someone who is.
- Interests/attitude. These may or may not be very revealing. To be really useful, more than just 'interested in sport, music, theatre' is needed, and membership of clubs, organizations, etc., especially charities may provide the best clues. The society pages with names of dinner guests/celebrity auctions, or local papers with details of community involvement can be of great interest to the researcher. Attitude is usually revealed in comments, either by the prospect himself or by others.

Estimating wealth

One of the hardest tasks in prospect research is that of estimating wealth and linked to that, ascertaining giving potential. The obvious places to look for wealth are the various rich lists, although this is limited to the top 500 or 1,000 in Britain and the world. Almost certainly everyone else will have looked there too, and probably already approached the individual. People make their money in one of two ways; either inheriting it or, more usually, creating it themselves. Self-made millionaires are usually in business, and can be traced through business directories, and the company's annual reports, where shares, salaries, options can be checked. Another way is to look for personal trusts in one of the guides to foundations and trusts. These will give the names of the trustees (often family members, friends or key advisers, and this can be useful whether approaching the individual directly or the trust itself, size of trust fund and annual gifts. Works of art, though difficult to value, also form part of an individual's wealth, as do rights from medical or engineering discoveries, patents, copyright on books, music, etc. Where a person lives, and indeed if they have more than one home, will also help the researcher build a picture of the potential donor's wealth.

Against all that, however, must be set provisions for old age, children, elderly parents or relations, cost of mortgages, business liabilities etc. It should be borne in mind that often wealth is not liquid, and donors may not be able to lay their hands on the money for a variety of reasons. Inherited properties or works of art may have restrictions on selling, being intended for passing down the generations. Shares cannot quickly be sold in large amounts without affecting the share price, often driving it down. And revenues from patents, books, music, etc., may come in small amounts; an often irregular flow of income, rather than up-front cash-in-the-bank.

This information is often available, although it is usually necessary to look in several different places before putting it all together. For directorships, try company directories, annual reports, news articles. The value of shares in a public company can be calculated from the share price; that of a private company is much harder, and sometimes a comparison with a similar but public company may be all that is possible. Partnerships such as solicitors, accountants, surveyors, are very difficult to research, as they are under no obligation to file any sort of accounts which are publicly available. In 1993 and 1994 *The Observer* newspaper published a series of articles giving salaries in various professions, and Incomes Data Service compiles statistics on pay and salaries which it publishes. Pay is not wealth, but may give an indication. Biographical sources such as *Who's Who*[1] will usually give an address, as do telephone directories (where the individual is not ex-directory), from which property values can be estimated.

Gathering information: sources and styles

Clearly individuals, unless they are in the public eye, have a right to privacy. Information on individuals is not always available. Though it may be frustrating, sometimes the only answer is 'Nothing available within either the budget or time-frame allowed'. Information can often be found, but it may be too expensive, if bought from out-of-house via a specialist information agency or long online searches, or it may just take too long to arrive.

Prospect research does, however, have a number of sources to which it can turn:

- In-house files, especially if the organization has dealt with the individual previously. To ensure that these are current, those who meet/contact the individual should be asked to make good file notes. If the solicitation staff leave, their 'head' knowledge goes with them, and prospects will not appreciate being approached 'cold' again. Files should be built up on potential prospects and actual donors, influential people for dinner invitations, opening buildings, launching campaigns, etc. National and local newspapers, relevant journals, society magazines such as *Hello!*, *Tatler*, etc. should be scanned for names, and lists of people involved in the organization and their contacts, especially patrons, volunteers, etc. compiled.
- Biographical books, such as *Who's Who*[1], *People of Today*[2], *Debrett's Peerage*[3], are a very good

starting point. It is useful with such books to check their methods for including people, especially the 'who's who' type, where inclusion may depend upon payment of a fee.

- Professional books listing doctors, solicitors, chartered accountants etc. These do not give much in the way of biographical information, possibly age, graduation date or date of appointment and university, but they may be an important way of networking, using a volunteer to approach colleagues or partners.
- Other books, such as business directories, telephone directories, those which list governmental or quasi-governmental bodies, trade organizations etc.; local reference books from Chambers of Commerce etc. These may not give information on specific individuals, but may be useful starting points for broader information requests.
- The local library. As an ex-librarian I have a particularly soft-spot for local libraries, but especially for smaller organizations, which cannot afford to maintain a large in-house collection of books, the library is a key, if somewhat underutilized, resource. In addition, good reference librarians often know alternative methods and sources, particularly about their local community.
- Online databases, CD-ROMs and the Internet. Online databases such as FT-Profile's *Infoplus* and Datastar-Dialog, offer up-to-the-minute information, but at a price, which usually involves not only the actual cost of the search and registration fee, but hardware costs in terms of modems and the software to run them. The same is true of CD-ROMs, and these are not updated as frequently. There are agencies which will run searches for a fee, thus avoiding the need to install hardware and software and train personnel in their use. However, if these are used frequently it might be cheaper to do the searches in-house. The information super-highway, the Internet, will become increasingly important in the future. It is much cheaper than online databases, as the only charges are for connection and telephone time, but the accuracy of the information is possibly less guaranteed than with other electronic sources. In addition, the information on the Internet is not indexed, and although programs for browsing are becoming more sophisticated, it is often frustrating to search.

Once the information has been gathered, the style of the report will clearly depend upon the use to which it will be put. Unless time is very short, try to add value to the information. Anyone can photocopy an entry from *Who's Who,* but a key part of prospect research is analysis and summarizing the information, gathered from various sources. In some circumstances a purely verbal report will be enough, particularly for small pieces of information, whereas a more formal full report may be requested before making the initial approach to the prospect. Somewhere in the middle lies the summarized briefing needed prior to subsequent meetings with the prospect, or updates of existing reports.

Whatever form the report takes, accuracy and currency of data are vital. Even minor errors can affect the solicitation process, and discredit the rest of the report. Information should always be checked and it is advisable to include a list of sources – this will enable checks to be made, covering the researcher in the event of any problems. This is particularly true of anything which could be perceived as sensitive or embarrassing, such as the prospect's marital or financial status, education (if s/he failed examinations, or did not complete schooling etc.). It is important to ensure that titles are correct, e.g. Dr or Mr, Ms or Mrs, OBE, CBE, KCMG etc., and that the correct given name has been used, e.g. Sir John not Sir Anthony, where he is using his middle name. Their name should also be spelled correctly, as incorrect spelling is unnecessary and implies lack of care and interest in the person. This is even more important in the case of non-English names, where accents and transliterated spellings will complicate the issue. Wherever possible information should be cross checked. It should be borne in mind too, that some sources are more reliable than others, although spotting this comes with experience. If in doubt, the answer is to check on an entry which can be verified elsewhere.

Personal information should be treated as confidential even within the organization, especially financial details. Reports should be marked as confidential, and care given as to who can see them. Discretion is needed in researching an individual and, to a lesser extent, a company, if they are not to be alerted to the fact that the organization is interested in them, before the approach is actually made. This can be a particular problem when using out of house agencies. The Data Protection Act has certain implications for charities which hold any information on computers. This includes reports written and research done on individuals, who have the right to ask to see their records.

Inevitably researchers summarize the available information. So it helps if they are free to make comments and suggestions based upon what they have learned. A researcher may feel that the prospect earmarked for a particular project has no interest there and that another project might be more suitable. It may be apparent that there is no real point approaching them at all given their attitude towards the organization or its aims. Alternatively the researcher may think that given careful cultivation, the prospect might be willing to make a donation. This is one of the key aims of good prospect research: to facilitate a donor-led approach.

Directors, companies and trusts: the key to the organization

In some respects, researching companies or trusts is no different from researching individuals. After all, organizations are made up of individuals and it is they who will decide whether or not to make a donation. So the research criteria and techniques suggested above still apply.

Following the recession, companies have become much more aware of getting value for money from their donation, and are applying stricter criteria in deciding which of the many causes which approach them to support. Companies have a responsibility to their shareholders first and foremost, as it is their money which is being given away. Many companies make charitable donations, often to boost their standing in the area in which they operate by way of public relations, but sometimes for tax or other reasons.

Whatever the reason, the appeal must be relevant to the company's business. There is usually a committee within the company which oversees all such applications, vetting them against previously agreed criteria. The company will generally make details of its giving policy available. Alternatively it is possible to check either the annual report, where public companies must declare the total charitable and political donations for two years, or books such as *Guide to Company Giving*[4], *Hollis Sponsorship and Donations Yearbook*[5] etc. The annual report will also give details of the company's business and locations. Donations made from a company's charitable budget are generally small, and companies which have established a trust or foundation will often use these as their means of philanthropy. There are several key publications, *Directory of Grant Making Trusts*[6], *A Guide to the Major Trusts*[7] etc., which profile the trusts, their finances and trustees.

As with individual prospects, it is important to find links between the company or trust, and the charity. These might be employees or directors/trustees who are donors, volunteers, patrons, or who are friends or associates of people who are. A good network of volunteers is particularly important when soliciting companies. It is very different being approached by a fund-raiser, no matter how worthy the cause, and being solicited by someone who is a peer, especially when they themselves have made a donation. Directors, trustees and the appeals committee can be researched in the same way as an individual, especially any charitable interests they may person-

Companies will often also second employees to charitable organizations or provide goods in kind instead of making an actual monetary donation. While these may not be what the charity primarily needs, to have an experienced manager or enthusiastic graduate for six months or a year, may be a means of introducing new ideas, techniques and contacts.

International fund-raising

Charities have become increasingly professional in their approach to fund-raising over the last few years, and are aware that there is a large potential market of donors lying outside their own country. With the publication of rich lists by the American finance magazines *Forbes* and *Fortune*, it has also become apparent that there are more high net worth individuals overseas than in Britain, and that by focusing solely on Britain charities are restricting their pool of potential donors. Prospect researchers are being asked not only to profile individuals overseas but to find other prospects world-wide.

The same principles of prospect research apply when researching prospects overseas; there are just more barriers to finding the information. In the first place, although English is widely spoken around the world, there are many countries where it is not the first language, or even the second one. Ability to make oneself understood in foreign languages will increasingly become just as much a tool of the researcher's trade as an ability to use online databases. However, for those for whom their experience with foreign languages is limited to French at school or ordering beers in Spanish cafes, all is not lost. Online databases cover many foreign newspapers, magazines and journals, translating articles albeit often as an abstract, and much information can be gleaned from a well-written interview or report.

Finding biographical books is very difficult, and may take numerous telephone calls and faxes. There is also no guarantee that the information will be at all current; the fact that the 1995 edition is the latest does not preclude the data from having been gathered a couple of years earlier. However, publishers are beginning to wake up to the fact that biographical information is highly desirable, with the result that

[redacted]

include summary information about the country's financial, political, cultural and economic background, as well as names of potential donors, volunteers, patrons or other useful people. Books such as *Statesman's Year-Books*[10] and the *Europa World Year Book*[11] provide very good general background, while country surveys focusing on business and economic development are published by the financial press, especially the *Financial Times*.

Wealth is particularly difficult to estimate overseas. The annual *Forbes* and *Fortune* rich lists mentioned above prove just how difficult it can be, as their figures do not always tally, and individuals are included on one but left out on the other. Wealth is also relative to local circumstances, and this needs to be borne in mind when researching prospects overseas. This can be illustrated by the way that some newspapers now use the price of a cup of coffee, or a 'Big Mac' when comparing average earnings.

Company financial reports are not always written for the same audience, and therefore the figures will be different, depending upon the way, for example, that assets are valued, or tax is treated. Reports may be written to play down profits for tax reasons, or to boost assets prior to a listing on a stock market. Companies which trade internationally, or which are listed on UK or US stock exchanges may provide standardized figures, often using US GAAP accounting methods. Europe and the US have large – generally well regulated – stock markets, but many big, even household names, are still privately held, especially in Germany and France, and information on companies, and the people that run and own them can be very difficult to trace. Most European countries do not have a centralized company filing system such as Companies House in the UK, but instead file their reports with the local chamber of commerce. Books such as *Principal International Businesses*[12], *Europe's 15,000 Largest Companies*[13], etc., online databases and CD-ROMs, and Extel cards provide good – though not comprehensive – financial figures in standardized formats, while Disclosure can obtain annual reports for most quoted companies in Europe and the US, and some private companies. Extel cards, which predominantly cover quoted companies, including companies overseas, summarize annual reports and events which may affect the company's share price. They also include details of the major shareholders, and are a valuable resource for researchers.

Prospect researching overseas (with the exception of parts of Europe, North America and Australia) is rarely as straightforward as researching the UK. It will usually involve numerous fruitless telephone calls and a lot of detective work and resourcefulness on the part of the researcher. The relevant embassy or diplomatic representation may be a useful starting point, within reason, as can be local chambers of commerce which have counterparts overseas, and Government departments. The local library, especially if it has a business section may offer international books.

Some of the big UK accountancy firms, including Ernst & Young and Price Waterhouse, publish guides to doing business in various countries, everything from dress code and starting up a business, to understanding local balance sheets. Newspapers and magazines, too, are a key resource, both British and overseas, with some written specifically for an overseas/expatriate market.

Conclusion

Together with the charitable sector of which it is a part, prospect research is a growing area. The resources available will probably continue to increase, with more of the researcher's skills being in the analysis and summarizing of the information. Prospect research requires a professional attitude and a resourceful, enquiring mind. But it is very rewarding to see a gift come in from a prospect which the researcher has profiled, or whose name the researcher suggested in the first place.

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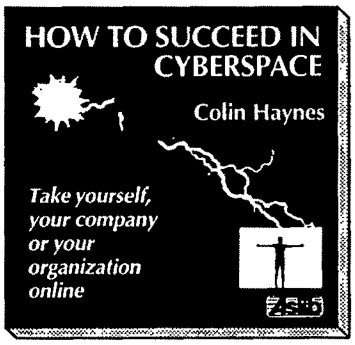

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Aslib THE ASSOCIATION FOR INFORMATION MANAGEMENT

Information security – protecting your assets

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Paper presented to Managing Information as a Corporate Resource, an Aslib conference held on 27-28 November 1995, in London.

This paper will highlight the legal aspects of information security and copyright laws, as well as global networking, remote access, single sign-on and Internet security in an international environment.

Introduction

I was asked a few weeks ago whether I would be prepared to speak at this conference and provide a case history of Rothschild's current IT security status, what we perceive the risks and challenges to be for the future, and hopefully how we intend to tackle them. I will describe how Rothschilds, which is almost two centuries old, has evolved from a European company into an international one, and how, as the business becomes truly global, it faces the sorts of security, audit and control risks that have been highlighted during the conference. We are still looking for solutions. I hope to explain a little about Rothschilds as an international group, and will then home in on seven main topics which we have to consider now and for the future.

The Rothschild business

Since the early days in the nineteenth century, wars and economic change have altered the pattern of banking. N M Rothschild and Sons Limited (the Merchant Bank), Rothschild Trust Corporation Limited and Rothschild Asset Management Limited are now linked through the main holding company based in Switzerland, with a large number of banking and investment companies throughout the world.

The Rothschild offices are roughly split into three arms around the world, in the Americas, Europe and the Asia Pacific rim. Most of the offices and businesses are computerized, to a greater or lesser degree, and many of those offices now require to be networked in some way, whether solely for email, or truly networked into the business applications. We also have clients now wishing to access Rothschild applications in real time.

Legal responsibilities for IT security

Responsibility should be placed on one department within an organization for security policies to be upheld. Part of the department's purpose should be to ensure that the company is conducting its business in compliance with the relevant legislative and commercial regulations.

The IT security policy must include mandatory statements to cover all IT related legislation. Procedures must then follow to ensure that the business adheres to the policy. Frequent audits of the business against policy must be undertaken to assure management and the regulatory bodies that the Company is 'legal'. More and more, it is the case that underwriters and insurance companies also want assurance that these controls are in place.

As well as IT law, companies also have a statutory duty to comply with the Companies Act 1985 and the Financial Services Act 1984. The principle IT-related laws are the Data Protection Act 1984, the Computer Misuse Act 1990 and the Copyright, Designs and Patents Act 1988.

Rothschilds tend to base their IT Security culture for the whole group on UK legislation, which by and large ensures that all its offices are well controlled and secure.

I will take each Act in turn and look at the responsibilities we have:

Data Protection Act 1984

The Data Protection Act was established in 1984 to give rights where information is held on an individual. It sets out rules and regulations for those who use and record computerized information.

There are eight principles mandated in the Act to ensure that the correct practice is being conducted with regard to data. The 'Eighth' principle is the most important with regard to security. It states that anybody holding any personal data must ensure that the data is well controlled and secure against any unauthorized access to, alteration, disclosure or destruction.

The current EC Directive on data protection in databases and telecommunications is set to make compliance even more onerous on companies. The Data Protection Act currently only applies to automatically processed data, i.e. information processed by computers. It does not cover information processed manually. However, the EC Directive is erring towards registering manual records as well. Other changes to the Data Protection Act will make an obligation on banks to notify the data subject where a bank obtains personal data other than from the customer. Granting credit facilities based on an automated scoring system may also be restricted.

The differing laws of the EC countries mean that when dealing with transferring data across international borders, consideration must be given to the different data protection rules for each country. Maybe with the implementation of the EC Directives there will be more harmonization. Rothschilds are currently looking at the implications of cross-border and trans-national access to systems, with particular reference to personal data.

All Rothschild companies in the UK and Channel Islands are registered with the Data Protection Registrar, and it is my duty to ensure that all registrations are correct. We have an annual programme within the UK and the Channel Island companies to canvas all Department Heads to ensure that the returns are up to date. To give you some idea of the volume of work, in the UK offices alone, we have just canvassed 95 Department Heads!

The Computer Misuse Act 1990

The Computer Misuse Act was introduced in 1990, to try to contain the growing menace of 'hackers'. The perception is that so far it has been limited in its success. There are three offences: that of unauthorized access to a computer, unauthorized access with intent to commit a further crime (such as blackmail), and third, unauthorized modification or deletion of data.

For Rothschilds to be able to prosecute an offender, or indeed defend a prosecution, the Company would have to show that it had duly authorized all of its computer users, and by implication not authorized any other person. To that end, all access to computer systems within the UK and the Channel Islands is authorized by the Department Head, or the owner of the data, and the IT Security Manager. Any amendment to that access has to be recorded, and ideally the user must acknowledge the extent of that access. Historically, we have always authorized users, by completing the relevant access form, but have neglected to have the user acknowledge their access. This is now being remedied in a major exercise. It is also my intention to have a 'registration' database, so that the process of record keeping is more automated. This is becoming more pressing, with a continual increase in the user base, and the many number of 'systems' involved. I will mention next who has responsibility for creation, amendment, deletion of users, etc. I will also discuss how we will attempt to cut down on the number of times a user has to be authorized, when I discuss single sign-on.

The Copyright Designs and Patents Act 1988

Under this Act we have to deal with the issue of copyright in software written for in-house systems and bespoke computer software. We also have to ensure that all computer software used within the Rothschild companies is legally obtained and licensed to be used. The administration of this task four or five years ago used to be relatively simple. Since then, the purchase and use of Apple Macintosh machines and PCs has grown like 'topsy'. The administrative overhead is massive. We now have over 1,000 machines, and as you can imagine, with a plethora of companies and differing businesses under the Rothschild 'umbrella', it is virtually impossible to have a 'standard configuration' for a PC or Apple Macintosh.

At present, we are evaluating several products, with the aim of being able to audit all machines over the network. The products we are looking at also have the advantage of allowing software downloads over the network. At present, with certain packages we can do a certain amount of auditing over the network, but the rest of the machines have to be audited manually. This is time-consuming and inconvenient for the user. We also used to do only sample checks, but then found it difficult to establish that all copies of products were licensed, as the reconciliation of number of copies to licences is of paramount importance. In other words, you have to audit all machines.

Whilst auditing the machines, we also highlight any use of games software, which is banned within the Company. We also used to herald our arrival, but not any more! I have to say that so far we have had the utmost support of management in this task, and have not had any conflict over surprise audits. You definitely need to create a culture where the business and the 'policemen' are working towards the same goal.

All in all, the exercise is useful and necessary, and should be carried out at least twice a year. As well as providing assurance that the Company is correctly licensed, it also helps the business in highlighting where there may be waste, i.e. unwanted copies on people's PCs.

Federation Against Software Theft (FAST)

Rothschilds is a corporate member of FAST. Although this obviously does not provide immunity from search by FAST, we have found membership to be useful, and attendance at the annual conference very educational, as it brings together all factions of the software industry.

DTI Code of Practice BS 7799

Rothschilds is preparing a programme of work, using appropriate software, to audit the company's compliance with the Code. For both the Bank and the Asset Management company, we hope to gain accreditation in the long run, as we feel it will improve our business and client relationships. To repeat what I said earlier about underwriters and insurance brokers, they are already looking to see that businesses are taking up the key controls of the Code.

That really concludes the work we do to ensure compliance with IT legislation. We constantly keep ourselves apprised of the current EC stance, and try to keep slightly ahead of the game. We are fortunate in having an in-house legal department, which has IT legal experience as well, so that we can work together on the best practices for the Company. As

I said earlier, we also endeavour to promote those practices to other offices round the world, even though those offices may not be covered by such legislation. It ultimately helps to ensure good controls when transferring data, email, etc, around the world.

Security infrastructure

I will now move on to outlining the security infrastructure which we have in place at Rothschilds. This is not necessarily how it should be done, and I will highlight where we currently have inefficiencies, but so far it has worked well.

IT Security Committee

IT security should be promoted at the highest level in the company if it is to gain credibility. Unless the Chief Executive of the company endorses the policies, then you are facing an uphill struggle.

To that end, a committee or steering group should be appointed, with the best qualified personnel to promote security policies and procedures.

The Rothschild IT Security Committee comprises senior members of the Rothschild companies, both from the UK and the Channel Islands. It also contains the House Security Manager, a member of the Compliance Department and the IT Internal Auditor. The Committee sits every month, with a full progress report being issued by the IT Security Manager every quarter. The Committee has the following terms of reference:

- Definition of the scope of corporate IT security.
- Review of current practices, procedures and responsibilities in security matters.
- Implementation of the necessary changes of procedure relating to IT security matters.
- Consideration of the effect of any security risk and formulation of a recovery plan.
- Formulation of IT security policies and procedures.
- Identification, where necessary, of responsibility for security matters.
- Responsible for approving an annual IT Security plan.
- Reporting to the Audit Committee, at least annually, on its security responsibilities and on progress on work undertaken.
- Provision of information to all staff to ensure that they are aware of, and alert to, IT security issues. This will normally be in the form of staff notices, or distribution of policy documents, or staff handbooks.
- The Committee exists to address all aspects of IT security within the Group.

IT Security Group

This should be a group of personnel, preferably independent from IT, who should be qualified to provide advice with regard to IT security matters. Their area of responsibility should cover the monitoring of access, authorization of access, security designs and legal compliance. It should also be possible for all IT security work to be conducted in a non-privileged environment.

My department currently has six people, including a secretary, although she could be judged to be an IT security assistant as she deals with a certain amount of technical work within the department, as well as administrative duties. The other members of the group have either been taken from an IT operations or technical support background, or have been recruited direct from the IT security industry. All have to be well versed in security issues, and equally well versed in the business which we serve. It is impossible to conduct reviews or meetings with the user fraternity, if all we can speak is 'techno'. Equally, more and more effort is being made in the business to ensure that end users are more IT literate. This creates a much better working environment. It has always been my aim to provide value for money and add value to the business, and not to dictate policies and procedures for the sake of it. It is only possible to obtain the most practical security solution if we understand how the business works.

As stated above, ideally, the IT security department should be independent of IT. The Rothschild IT Security Department is within the Finance Division of the Bank, and I report directly to the Finance Director, who is on the Board. I also have a dotted line reporting structure to the IT Security Committee Chairman, who is also a Director. My responsibility is for the whole of the Rothschild group.

Technical Support Group

We have two IT groups within Rothschilds, one for the Bank and one for the Asset Management company, which makes for an interesting life! It follows that there are two IT Technical Support groups. Things are further complicated by the fact that these groups are also split geographically between London and the Channel Islands, as we have one of the main computer installations out there. However, technology copes with all of this, and both of these groups are responsible for set up and maintenance of access to core computer systems. This is only at the operating system level. As this usually entails the technical support personnel having privileged access to systems, all access is keystroke monitored. The audit trails are checked by IT security the following morning.

PC Support Group

The PC Support Groups are part of IT and exist to support the local area networks, both in the UK and the Channel Islands. As part of their job function, the PC Support Groups set up and maintain access to PC systems. This, in a similar fashion to the mainframe systems, is only at operating system level. All access is first of all authorized by the Department Head and the IT Security Department.

System Administrators

Within Rothschilds we have endeavoured to split the system level security from the function level security. Within the business we have set up data management departments to be responsible for maintenance of access to menus and to functions. This ensures a good segregation of duties, and reduces the risk of fraud. Again, any changes to the menu structure, and to access to the menus, is auditable. The audit reports are checked by IT Security daily.

Internal Audit

Who polices the police? Within Rothschilds, the Internal Audit Department, directly responsible to the Audit Committee, ensures that all IT Security policies and procedures are adhered to. The Internal Audit function, in periodic liaison with the External Auditors, checks that IT Security is performing its function correctly.

Within Rothschilds, IT Security, Internal Audit and an IT Quality Assurance function work together to ensure correct controls are applied, particularly with reference to in-house written applications and 'off the shelf' packages.

Having spelled out all the entities involved in the set-up and maintenance of IT Security, at the end of the day the security is only as good as the people within the company. At all the awareness and induction sessions which we conduct, I always stress that IT Security is the responsibility of everyone.

IT security policy

I would now like to outline how we promote the IT security policy to staff.

Security on computer systems and networks should be taken extremely seriously. The purpose of having this policy in place is to enable you to, in almost every eventuality, restore and carry on with the business activities.

It is important that security within IT is acknowledged and awareness gained that risks are inherent within a computer network. To that end, the essence of the IT security policy is contained within the *Staff Handbook*. A similar *Handbook* is maintained around the world for all other offices. The IT security section is promulgated to all managing directors of those other offices, to 'fit' it to local requirements. We have also created an IT security policy booklet for temporary or contract staff. This is issued when the person is engaged by the company. The contract or temporary member of staff signs an undertaking to comply with the policy.

The extended IT security policy and procedures, together with the IT Security Committee Terms of Reference, are bound together in an *IT Security Manual*. This again has been distributed to all overseas offices, and is reviewed annually. The *IT Security Manual* has a frontispiece endorsed by the Chairman, so that all members of staff are aware that the policies are underwritten at the highest level. If you do not have this commitment from the Chief Executive, then the manual or handbook is worthless and will not be taken seriously.

The difficult job then is to try to monitor achievements, success rate, etc. The benchmark has to be fewer and fewer breaches of security, more people coming forward voluntarily to discuss security issues and better security designed into applications. In other words the whole exercise is one of continual awareness and education.

Security catalysts

If we now move on to talk about security catalysts and then trends in security threats, as these two topics are linked.

There are increasing threats from viruses, hackers, fraud and espionage. We have a duty to ensure that the whole installation is secure from virus penetration, from people from within and outside the company 'hacking' in to our systems, and we have to be ever vigilant to the threat of fraud. We have a policy throughout the Rothschild Group that no diskettes should be introduced to a PC or the network, without being checked first for viruses. All machines in the Company are protected by anti-virus software, which is regularly updated. We also employ various anti-virus packages within PC Support to cross-check. However, you should bear in mind that the protection is only as good as the last virus update, and should never be complacent.

In much the same way as Microsoft employ the 80%/20% rule about use of MS software at home, we have a similar site licence for anti-virus software which allows us to provide copies to those people authorized to use their home PCs on Company business. This again gives you comfort that the data transferred to a home machine is not being infected and then uploaded back onto your network. We also promote use of the same software in all offices throughout the world. Where possible, we insist that the software is bought locally, so that support of it is more practical, and cost effective.

Equally, portable PCs should be protected with access control software. You don't want the 'Gulf War laptop in the boot of the car' scenario within your company!

There are now increasing expectations on us from the business, to provide adequate controls and audit trails. Pressure is also brought to bear by our business partners, who want to see that their data is being protected, and we, as a company, have to ensure that where clients wish to access our systems, they only see data which is theirs. Because of the rapid change in the way in which we do business, we have to provide assurance to the regulators, and both internal and external audit bodies that we can track all activity. We have recently been through an exercise to ensure that we could provide 'admissible evidence' in court, should it prove necessary. We also ensure that all new database designs have sophisticated audit trails, and try where possible to insist that all package software which we buy has the same capability. It is imperative that we should be able to prove what a computer, or computer system, was doing on a given date at a given time.

The other catalyst is the increased exposure of businesses to IT. Within Rothschilds there are now very few areas which are not computerized. Because of the sensitive and confidential nature of our business, we have to make sure that the previous perceived controls of cheque signing and paper authorizations are mirrored and improved upon in seamless IT systems. It is almost the case that transactions are input at the front end, wind their way through the 'black box' and come out at the other end and are transmitted to such bodies as S.W.I.F.T. This all happens without signatures, but the business wants the assurance that all transactions have been authorized, and that segregation of duties is incorruptible.

Trends in security threats

There are many threats to IT security today. There is an increased threat from espionage and information brokers. Fraud has increased with recession and restructuring. This, in turn, has highlighted the increased sophistication of virus and hacker groups.

There are different types of threats. The ones that are intentional and premeditated usually are initiated with the intention of corrupting and causing serious and sometimes irreversible damage, such as espionage, leaks, fraud, mischief, sabotage and vandalism.

The other threats, which can cause the same degree of destruction but are accidental or unintentional, are oversights, breaches, errors, failure, breakdowns and disaster.

Disasters that have become worldwide news over the past years are the two IRA bombs of April 1992 and 1993 which caused devastation. However, as a result of these catastrophes, many companies have realized that their businesses were exposed to similar risks and have put plans and emergency facilities in place. It is perhaps worthwhile remembering, though, that most businesses suffer outages, not from terrorist bombs and spectacular disasters, but mundane things like flooding, electrical failure, etc.

New challenges

In the future, business managers envisage increasing use of business partnerships, out-sourcing and electronic trading.

The threats of information security are expected to continue to grow as networking provides greater opportunities for unauthorized access.

New technology enables 'seamless' data sharing across networks, enterprises and continents.

The above is one of the main reasons why Rothschilds are heavily involved in S.W.I.F.T. and EDI is just around the corner and is another possibility for the future.

Today's requirements

At Rothschilds we have the concept of global access to computer systems, by ourselves (i.e. office-to-office communication, roving salesmen).

The business can be involved in very sensitive commercial deals and it has to protect that information. The business needs to transfer information from one office to the other and sometimes to clients' offices.

Other areas of the business have details which are of the utmost secrecy and information has to be moved between offices via a secure method.

The method currently in use is email. No one else should be able to view it or tamper with it. Most of the information is transmitted by store and forward methods.

Rothschilds also has a need to communicate with third parties. Most of the commercial transactions are transmitted via the SWIFT network. However, there are clients who wish to deal with us, many of whom are not members of SWIFT.

Some of the questions arising are:

- How to give our inter-group communication the security it requires?
- How to give the communication we have with clients the security it requires?
- How do we communicate safely and how do we allow clients to communicate at low cost, but with high flexibility?

Security requirements for Rothschilds Global Networking

Some of the solutions proposed are:

1. Via megastream to our UK offices, e.g. Guernsey, Isle of Man, Manchester. These are all via encrypted land lines, with ISDN dialup.
2. By contractual arrangement with third party vendors, for external services with the assurance of security. For email this will remove the inefficient 'Point to point' aspects of MS Mail. The user connects to a local connector and modem, the mail is transmitted to the provider's network and then forwarded to a similar connector and modem at the recipient's end. This is all transparent to the user. The benefits of this service are still to be proven, but the provider guarantees delivery to the addressee.

Remote Access

At Rothschilds we have an increasing need to create a 'lights out' computing environment. However, until we get to the point where this is achievable, we have support technicians on a 24 hour call out, 365 days a year (just like the Emergency Services)! Unfortunately we have the phenomenon of roving salesmen, pitching our wares around the world, who also need to log into the network.

Dilemma: Initially this was achievable from dumb terminals, via challenge and response systems with dial-back facilities. The user would only have the same access from a remote location as he would from his desk. We have the ability to audit the access. However, the log file only shows us the extent of the logging-in activity and the big issue to tackle is how to safely allow roving salesmen, technical support personnel and developers access via a PC?

Solution: We would like to continue our relationship with the tried and tested supplier. However, when posing the issue of auditability of downloaded data, the supplier has thrown up his hands in proverbial horror.

Rothschilds needs to know what is leaving the network. Many people would argue that data can be shipped off-site without our being able to police the situation (e.g. diskettes in a briefcase, a portable leaving the building, etc.). However, the speed at which a malicious user could download information, and the huge amount which could be transmitted, warrants the close attention and scrutiny.

Accessing the Internet

Like many other organizations in the UK, with offices and clients around the world, Rothschilds is looking at using the advantages of communicating via the Internet.

It is becoming more important to be able to communicate globally. However, it is crucial that the paths of communication and obtaining of data is secure. It must adhere to all those tenets which we as information security professionals hold dear, namely it must remain confidential; of prime importance to our company, the integrity of the information must be beyond doubt and it must be easily and readily accessible by our users (and ultimately, our clients).

From recent reports, it has become widely known that this system is open to hacking, which does not need to be malicious – curiosity can be enough. The mere fact that someone could be privy to our information is enough to make the business highly cautious about using the super-highway.

However, we have to a find a solution. We, as a world-wide business, can no longer afford to sit on the sidelines and watch the opportunity pass us by. Rothschilds, like any other corporate, has to sell its wares, and what better 'window' than the one onto the world at large.

In putting our requirements to service providers in the UK, we have yet to be assured that the 'firewalls' suggested would guarantee the secrecy and security of each transmission. For the moment, we access the Internet via standalone PCs, and have curtailed our access to Compuserve to standalone machines. However, the service and availability of the Internet has to be networked, for ease of use for the business. We are currently working on this project.

The Rothschild IT Security aim is to establish a framework of controls for managing security in such shared networks.

Single sign-on

As I outlined right at the beginning of the presentation, we have many offices, all networked, and all with many users accessing a plethora of systems. It is becoming increasingly onerous for the user fraternity to have to log in separately to all these systems, and to have to remember a multitude of passwords. Some of our systems, by design, have system-generated passwords, which also adds to the problem. The users, of course, write them all down, and who can blame them?

The other major headache is the management and security of all these systems. Contrary to popular belief, I do not have an inexhaustible budget, and the head count I have is not likely to be increased. At present, the department checks in the region of 50 to 60 audit files every morning, to check changes in authorization to systems, log-in breaches, etc. To do the job properly, it takes all morning for one person to check these reports. We also spend a large amount of time checking and authorizing access to all the systems.

The notion of single sign-on has been talked of for some time, but it is only just beginning to be taken up seriously by vendors. The hardware and software is still immature, in my view, and we have still a long way to go to reduce the administrative overhead of giving individual access to individual systems. The ideal is to be able to give a profile to a user, preferably as a defined 'role', and to authorize that user access to a security server. Once authenticated by the security server, access tokens in the form of menu items or icons on a screen are granted to the user for the duration of that logged on session. What happens behind the scene is transparent to the user, and although each of the 'satellite' systems may require input of a log-in ID and a password, all of this is done by use of these access 'tickets'.

This sounds marvellous, and is what we particularly are striving to achieve. However, the reality is that very few of the suppliers are yet ready to provide the mechanisms for this 'token' based mechanism. In the interim, there are access control packages, which will provide the 'front-end', so that the user gains the benefit, but the system administration is far from taken care of. Behind the scenes, scripting languages have to be used to do the job of accessing the 'satellite' systems, and the technical support teams still have to set up the users on all the systems.

However, nil desperandum, we are about to embark on a pilot to see the reaction of the users and to gauge the amount of work involved to administer it.

Tomorrow's world?

Through the take up of the Code of Practice and membership of such organizations as FAST, we at Rothschilds would like to encourage business partners to adopt equivalent security standards.

We need to streamline the process for managing security across business partnerships.

We need to adopt a standardized approach to network security to reduce the need for expensive risk assessments and lengthy negotiations with business partners.

Lengthy reviews are always required of packages and data feed services.

BS 7799 will hopefully provide a certification process.

Conclusion

In conclusion, I would say that the Rothschild Group is fairly well served with the latest in security tools and methods of control, but we are by no means complacent. We have an urgent need to address the risks and exposures I have outlined, and look to our suppliers for cooperation and commitment to our needs.

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Machine translation: success or failure using MT in an IT research and development environment

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Abstract

This paper discusses the use of raw machine translations in an IT research and development environment. Researchers use machine translation as a drafting tool for scientific papers. The language pairs are German→English and English→German. The raw machine translations are produced on an experimental basis by means of the MT systems LOGOS, METAL and Globalink Power Translator Professional. The experiments are to show whether the systems are suitable for this purpose or not. Since the use of raw machine translations is considered to be crucial to the future of MT, the paper discusses success or failure of the technology against this background.

Introduction

The history of machine translation (MT) is characterized by a strange mixture of euphoria and disappointment. Even after more than forty years of research and development in this field, machine translation is by no means a technology which is generally accepted and used. It is still debatable whether machine translation will be a success or a failure.

Against this background, the present paper describes experiments conducted to find out whether machine translation is suitable for purposes outside the traditional translation business, e.g. for drafting scientific papers in the information-technology-oriented research and development environment of GMD.

GMD – German National Research Centre for Information Technology (IT) conducts research aimed at the development of innovative methods and applications. It co-operates closely with industry and users, thereby increasing the competitiveness of the German and European economies. GMD has four main research areas: system design technology, communication and co-operation, intelligent multimedia systems and parallel computing. GMD's headquarters and five of its nine research institutes are located at Birlinghoven Castle in Sankt Augustin, near Bonn. Two research institutes are located in Berlin and Darmstadt, and there is a liaison office in Tokyo. GMD has a staff of 1200. The total annual budget of GMD is DM 170 million. A basic funding of 130 million is provided by the German Federal Ministry for Education, Science, Research and Technology (90%) and by the Federal States of North Rhine-Westfalia, Hesse and Berlin, an additional 40 million comes from project funds and industrial co-operation.

GMD researchers work at international level, their working language is English and most publications are written in English without producing a German version.

Some history

Let us first have a look at the history of machine translation in GMD.

Introducing machine translation

Since 1986, GMD has been using machine translation for the everyday work of its translation service, which is a central service unit belonging to the Library and Publication Service. In 1986, the translation volume was about 3000 pages per year and was increasing. Main language pairing was German into English followed by English into German, French into German and Russian into German. The reason for introducing machine translation was primarily not a quantity problem, but rather a quality problem. GMD does research and development in completely new fields with new terminologies. These terminologies are still developing and they are often not known to commercial translation services which are orientated to the requirements of trade and industry. Therefore, GMD had to find a means to do such highly specialized translations in-house in close co-operation with the experts knowing the terminology better than a non-expert translator.

The machine translation system introduced in spring 1986 was LOGOS, for the language pair German into English on an IBM mainframe. At that time, this platform fitted best in GMD's environment. The decision to implement LOGOS was relatively easy, as LOGOS was the only translation system for German into English offering dictionary extension by the user in the mid 1980s. After having solved a lot of mainly technical problems, for example, missing converters for word processing systems, the actual production of translations by means of LOGOS began in autumn 1987. And, in contrast to other machine translation applications at that time, using LOGOS turned out to be successful since the time required for handling a translation job was reduced by 50%.

Changing from LOGOS to METAL

In 1989, GMD decided to change to METAL, which had just been marketed by Siemens. In Germany, GMD is the only user who has ever directly changed from one machine translation system to another. The METAL system seemed to be more advanced and promising and the Munich-based development centre for German as source language made us hope for a better and quicker response to bug reports than with the US-based LOGOS development centre.

In December 1989, METAL was installed in GMD. The GMD terminology entered into the LOGOS dictionary was converted to the METAL format and could thus be re-used, which saved a lot of time and money. The METAL installation was as successful as the LOGOS installation, perhaps even a little bit more successful.

Translated material

The material translated by METAL and formerly by LOGOS were software manuals, project reports and scientific papers. These are texts of a relatively transparent style, and of a relatively homogeneous terminology, since this is a prerequisite for machine translation. Legal or political texts and any material of a more colloquial style are not suitable for machine translation.

Current situation

In the meantime, it has become GMD's corporate philosophy to publish preferably in English. GMD's researchers are to be able to write their scientific papers in English and this has changed the working environment of the translation service dramatically. The overall demand for translations has decreased considerably though there is an increase for translations from English into German since many texts originally written in English have to be translated into German if needed in this language, e.g. for German leaflets or for the German funding authorities.

In addition people are no longer willing to wait for a translation, they want to have it immediately. GMD's researchers work in an environment which is characterized by innovative technology. Worldwide access to information is by Internet. GMD's researchers want to do almost everything by key stroke or mouse click without leaving their office and, if possible, they want to do it themselves; they want to be independent.

Introducing a raw machine translation service

Despite having a solid knowledge of the English language, some researchers asked for support for writing their papers in English, or for producing a German version of a paper originally written in English. They did not want to be confronted with an empty screen. They wanted to have a tool producing an English or German text, thus facilitating and accelerating the process of writing. Therefore, based on earlier experiences with raw machine translation requesters and their acceptance of this type of translation, a raw machine translation service has been introduced on an experimental basis. The fact that GMD's Translation Service is also involved in research and teaching secured a most interesting test environment.

Environment

Three machine translation systems are used for the tests in the experimental phase. Globalink, version 4.0 for Apple Macintosh, translating the language pairs English-German and German-English, LOGOS, version 7.7, running on a Sun SparcStation 10, equally for English-German and German-English, and METAL, version 3.03, running on the same machine, for the language pair German-English only. Source texts are received on floppy disk, via file transfer or email using GMD's network which interconnects in-house computer systems and provides access to outside networks.

Procedure

The source texts are first scanned for unknown words. In a second step, the source texts are pre-edited by correcting typos or by protecting material not to be translated by specific characters as far as this material has been listed as unknown words. The actual unknown words are added to the dictionary of the MT system or, if necessary, the requester is sent a list of unknown words with suggested translations, asking him or her for revision. After having added the unknown words to the system, the system's translation process is activated. The result, i.e. the raw machine translation is returned to the requester via email, file transfer, or on floppy. Usually, translation is done overnight and the raw machine translation is returned in the morning of the following day.

In the experimental phase, the texts to be translated from German into English are processed by means of Globalink, LOGOS and METAL, translations from English into German can only be done by Globalink and LOGOS since the METAL version available in GMD is only for German into English. The requester usually receives the translation done by the MT system which returned the shortest list of unknown words since this secures fast handling. The other translations are examined by the Translation Service, or by requesters who are actively involved in the test. The examination is done by comparing the translations and by marking the best version and the worst version of each sentence, and by identifying those sentences which are completely correct, i.e. which show a near to human translation quality. The criteria underlying this classification are grammatical correctness and clarify.

First results

As expected, GMD's researchers happily accepted the idea of a raw machine translation service and used it intensively, though it is to be noted that the results presented in this paper are only of a provisional nature. The service was introduced in July 1995 and many people were on summer holidays. The actual use of the service started only after their return in September. Therefore only a small part of the raw machine translations have been examined so far. More reliable results will probably be added on the very presentation of the paper.

It is to be noted that the tests of the experimental phase do not aim at evaluating MT systems. They are simply to show whether the raw machine translations produced by the three systems in the information technology domain are usable for the intended purpose. It may be that tests in another domain will lead to results which are completely different to those presented here.

The following results concern source text problems, problems with the general handling of MT systems and dictionary expansion and, last but not least, translation quality.

Source text format

Though the source texts should be ASCII or Microsoft Word files without a syllabification at the end of a line and without foreign format control characters, the input files often contained material which required a lot of boring and time-consuming pre-editing. As discussed above, the requesters were asked to provide terminology. Sometimes they did so by including the specific target-language terms in the source text. Since an MT system does not understand the target language in the analysis phase, these target-language words had to be removed or protected against translation which required a lot of tedious pre-editing.

Source text correctness and style

Experienced users of machine translation systems know that the quality of a raw machine translation depends considerably on the quality of the source text. Even in an academic research environment, as in GMD, the source texts are far from being perfect. Though spelling checkers are available to everybody, the source texts contain typos, the use of grammar and punctuation is not always correct and the sentences are often complicated and lengthy. This applies in particular to German source texts. Therefore, a certain amount of bad raw translation quality is to be attributed to poor source text quality.

Source text ambiguity

Most people underestimate the ambiguity of language. They are often not aware that the terms they use also have another meaning and that certain phrases can simply be misunderstood. Using MT systems for producing translations mostly means to select subject-specific dictionaries and to exclude general dictionaries or other subject dictionaries. For example, in a technical translation the English phrase

'everything will turn out all right'

was translated into German as

'alles schaltet alles Recht aus'.

The verb 'turn out' was available only in its technical meaning. The same applied to 'all right' which was translated literally.

MT system handling and dictionary expansion

The general handling of the MT system and the ease of dictionary expansion are factors which are of great importance to the usability of MT systems for raw machine translation since they influence the speed of translation delivery.

Globalink. The Globalink Power Translation version used for the present tests does not include a facility enabling the user to scan a text first for unknown words. One has to activate the translation process for doing so. It delivers a list of words not found in the source text. Therefore, machine translation with Globalink requires two complete translation processes, one before dictionary expansion, the other after dictionary expansion. Globalink for German->English does not deliver a list of recognized compounds with suggested translations. Therefore, there is no chance to correct strange combinations or to expand the dictionary by the required subject-specific compound translations.

Dictionary expansion is somewhat tedious, since the menus are not self-explanatory. One has to remember specific codes for teaching the system the inflection or the usage of a word. Naive users will probably master the menu better than somebody with linguistic education, since the latter might expect a specific logical structure of the dictionary menus. The facilities for teaching the system non-standard translations are restricted.

LOGOS. LOGOS provides the facility of a so-called new word search. This search produces a file of unknown words and suggests translations for compounds based on the known constituents. The file can be used as an input file for dictionary expansion, thus enabling an adaptation of the dictionary to the specific source text. Dictionary expansion, which is done by means of a tool named ALEX, is rather easy and quick. The fact that new verbs cannot be entered by the user was of minor importance to the tests, since the source texts contained hardly any new verbs. In addition, LOGOS is rather robust with respect to unknown words. In most cases, sentence analysis is successful and the unknown word is in the correct position and need only be replaced with the target language term. The ALEX menus are self-explaining, though some of them are somewhat untransparent. A tool called SEMANTHA enables the user to teach LOGOS non-standard translations within a restricted number of templates.

METAL. Among the three systems, METAL is the only one providing a so-called pattern matcher, Germany, human translation is rather cheap, therefore fully post-edited machine translation cannot compete. To survive, machine translation has to look for application areas using its actual advantage, namely speed, and it is speed which is required for the information transfer on the data highways of the global village.

However, as evolution teaches, survival requires change. Machine translation systems have to be improved to be successful. This improvement should not be restricted to user interfaces. It should also include robustness and it should implement the state of the art of computational linguistics, since available machine translation systems are far behind it. The user securing the success of machine translation will be the end user and not the translator, and what the end user needs are easily operable, robust and fault-tolerant machine translation systems enabling him or her to overcome the language barriers in global communication. With such end-user-friendly systems, machine translation will be a success and not a failure.

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SECURITY ISSUES ON THE INTERNET

Chris Leiby and Mark Konkol

WORKING HABITS OF SIX US INFORMATION SCIENCE FACULTY: WHERE DOES TECHNOLOGY FIT?

Elisabeth Davenport and Colleen Gorman,
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IS THE BUSINESS CYBRARIAN A REALITY? INTERNET USE IN BUSINESS LIBRARIES

Sarah Kelly and David Nicholas

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Security issues on the Internet

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Paper presented to Profitable Marketing on the Internet, an Aslib Conference held at the Cafe Royal, London, on 3 and 4 April 1996.

Abstract
The Internet is rapidly becoming one of the most important technologies for global communication and business. Although businesses are generally aware of the necessity of safeguarding valuable company information, the scope of networked communications and the speed of change can make it easy to overlook the many and varied modes of access to data. This paper presents a non-technical overview and points the way towards a sensible consideration of security issues.

Introduction
The Internet has the ability to connect together a wide range of different computers, operating systems, and, most importantly, computer users. Attracting these potential customers requires, at the very least, some company information to be available to the world at large. Although this raises valid security concerns, these must be balanced against the enormous advantage in allowing customers, employees and sales representatives to use this accessibility to company information as a business resource. In a rapidly changing global marketplace, the remote employee needs as much or usually more access to company records as the employee at head office. Truly embracing the Internet concept may in fact lead to there being no such thing as a head office but rather a distributed body of accessible self-organizing individuals, connected together by the online company presence.

Controlled levels of remote access to company information and resources remains, however, the holy grail of the Internet business community.

History of security on the Internet
The Internet was never designed as a secure system, unlike, for example, the current day banking networks used for finance transactions. Specifically, the Internet was commissioned by the US military in the 1960s to allow researchers funded by the Defense Advanced Research Projects Agency, (DARPA), to communicate easily their results and information. Initially a number of connections were set up between computers at various major university sites across America. Data are sent in small self-contained 'packets', each packet with its own independent knowledge of its destination, and the connected systems cooperate to forward the packet appropriately until it arrives. The actual route is entirely arbitrary.

The original universities became the backbone of the network, and the academic environment spawned a whole variety of home-grown software (for electronic mail and file transfer between computers), again with the purpose of research in mind.

The experiment was wildly successful and was allowed to grow, its popularity rising on the strength of it allowing effective communication between individuals. As more computer systems, known as 'hosts' were connected, the prospect of unauthorized access to computers arose. Only moderate safeguards were employed, and most attacks on computers were mischievous, although damage was increasingly done to the systems.

In 1988, a well publicized attack on the Internet ('the Internet Worm') began to raise significantly the awareness of the general Internet community as to the relative ease of unauthorized activity on systems connected to the Internet. A software program was released and used a series of techniques (password guessing, exploiting errors in operating systems) to copy itself to as many computers as it could find, slowing the infected system to a near standstill. Although it caused no physical damage, some two thousand computer systems were virtually unusable for several days representing a substantial cost in time and inconvenience. This 'denial of service' attack served to highlight the security problem.

With the advent of the World Wide Web towards the beginning of the 1990s (a protocol whereby even the computer novice could explore the unbelievably varied information held on the many computers connected to the Internet) the potential for electronic commerce using this medium became apparent. The main Internet backbone also passed from sole US government ownership (the National Science Foundation) into private hands (AT&T and others). The potential for more serious business use, such as ordering products, making payments or stock queries, became apparent.

Security issues are currently top of the agenda for companies looking to attain an Internet presence, and enormous efforts are being made to satisfy this need. The market for security products is growing at some 40% a year (according to research by Intervid Ltd). 1996 will almost certainly see the establishing of one or several standards for secure transactions over the Internet, which will precipitate an explosion in the supply of information and products on demand.

Importance of corporate-wide planning

It is seldom effective to consider the Internet simply as an optional extra to the business strategy, although this is the current fashion. Few businesses have embraced the potential of the Internet and used the opportunities for two-way communication as a serious advantage (for example using the interactive elements on the World Wide Web). A notable exception is the Federal Express Web site, where customers may track the progress of their consignments entirely at their own convenience. This represents ideal exploitation of the Internet, whereby a relevant and desirable service is offered to the customer. The corollary is that this also requires correspondingly more access to internal company data, namely the company parcel tracking database.

Many companies' reluctance to use the Internet has had some foundation on the fear of compromising this sort of internal business information. However, to a major extent this can be guarded against by ensuring a consistent security policy throughout the organization.

This is not a negotiable option! A chain is only as strong as its weakest link.

A piecemeal approach to planning and connecting to an external network will invariably leave gaps. Some areas of the internal network may hold highly sensitive data, others mostly publicly available information. Although great care may be taken to ensure external links to a restricted area are secure, this effort may be entirely wasted if internal network security is not taken into account. For example, if all computers on the internal network are assumed to be trustworthy, any breach in a less restricted area allows immediate access to the more sensitive data through an internal path. To offset this, a comprehensive solution incorporating the following three layers is required:

- Policy – an overview of requirements, understandable at all company levels
- Standards – techniques to measure security compliance
- Procedures, guidelines – implementation details for the policy.

To facilitate this it is absolutely necessary to maintain a security team, dedicated to implementing a consistent enterprise-wide strategy. Occasionally assigning individuals to administer security is not sufficient to ensure consistent standards are maintained. The responsibility of such a team should cover at least the areas of data protection, unauthorized access detection and user access control. The scope of these activities follows below:

Data protection: Physical security, ensuring no tampering or removal of the computers that data are stored upon. Software verification, checking of programs before installing them on user machines to prevent malicious and deliberately hidden programs from destroying data. Network configuration, ensuring only computers with the correct permissions can connect to and access others. Threat monitoring, checking public sources of information for details on software errors that reduce security. Data backup, defining scope of and frequency at which data on the system should be copied to another medium and stored safely.

Unauthorized access detection: Notification procedures, who to contact and what action should be taken on detecting an attack upon the system. Responsibility for checking records of accesses and acting on any anomalies.

User access control: Defining zones of authority among departments and computer users, i.e. who should be allowed to access what data. Enforcing appropriate authentication techniques to achieve this.

This is not a part-time endeavour! The changing nature of any business in the current climate (employee turnover, new competition, malicious information gatherers) demands constant attention. The obvious, such as ensuring ex-employees no longer have computer access, is easy to overlook if security is an afterthought.

Approaches to reliable network security

Based on the assumption that an internal company network exists, a full analysis of the current setup needs to be made before an external connection can be considered. Because of the variation in internal networks, there is little common ground and off-the-shelf solutions may not fully cover all options. However, a reasonably standard solution will incorporate the following features:

Router: Dedicated hardware that sits between the internal and external network and guides data packets of information to their appropriate destination. The router will be fully configurable to support blocking of packets that have no right to be on the internal network, i.e. a packet from an external machine sending a request to retrieve data from an internal computer. This in itself is not sufficient to ensure security, as packets may be forged, 'spoofing', to appear as if they come from an internally trusted computer, despite having actually originated elsewhere.

Bastion host: This refers to a specific computer, placed between the router and the external network, running highly specialized software (with all standard software access tools disabled or removed) that analyses the information in packets passing through. When an external computer attempts to access an internal machine by sending packets requesting a specific service (email, file transfer, running a remote login session, etc), the host will block any packets requesting services that could be used to access restricted data. Therefore, rigid control is possible. Also, since most general software has been removed from the machine, there are fewer loopholes that an attacker may exploit to move into the internal network. The correct combination of a bastion host and a router creates an effective 'firewall' between the internal secure network and the external Internet, with a tightly controlled and minimal route through the wall for permitted access.

Sacrificial host: A machine placed between the firewall and the Internet, i.e. outside the secured area, with relatively few restrictions on external access. Data on this machine are deliberately placed there with the intention of being accessible, and so presents the external face of the company to the Internet. Access beyond this point through the firewall into the internal company network may then be severely restricted, as there is no requirement to present further information. The sacrificial host can also be set up to provide a delaying function, by pretending to be more useful than it actually is and thereby occupying the attentions of an attacker long enough for the attack to be noticed.

The above setup serves to buffer the internal environment from the external, and prevents eavesdropping and access to restricted data. However, this cannot protect information that must be sent across the network from being intercepted. The intrinsic nature of the Internet, whereby packets of information make their own way between computers, means there is absolutely no guarantee of safety along the route. Cryptographic techniques must be used to disguise the data in transit before reconstruction by the authorized recipient. The current status is that excellent techniques do exist and are being used, yet no dominant standard has emerged. Two leading candidates are known as SSL (Secure Sockets Layer) and S-HTTP (Secure Hypertext Transfer Protocol). SSL takes each individual small packet of data, encrypts its contents before sending it to another machine and works for any application transferring data, while S-HTTP is specific to information sent through the World Wide Web and encrypts the main body of information as a block before sending it normally.

Degrees of risk in using the Internet as a marketing and communication tool

The following sections present a graded set of levels of Internet usage. The first section describes the most basic level of Internet presence, requiring the least access to internal sensitive company data and hence the most easily secured option. The following sections progress to a fully integrated Internet marketing solution requiring specialized controls to ensure internal data are kept secure. Appropriate safeguards at each level are described.

Advertising and promotion

It is possible to place static information on an independent computer system entirely disconnected from the internal company network and simply present public information to the customer through, as in the common case, the World Wide Web. This poses no real security problems (responsibility passes to the owner of the independent hosting system), but is least likely to make a lasting impact because of the lack of interaction between the customer and the company. Alternatively the information may be held on a sacrificial host administered by the company itself, which may allow easier updating but also slightly increases the degree of risk. Furthermore, this may require investment in a relatively fast connection to the Internet to ensure as good a response as that from a specialized independent service.

Email communication

Electronic mail is the dominant and most pressing requirement for an internal network to be connected to the Internet. Although email may be available locally, no business intending to compete and grow can really afford not to exploit the opportunities for global, cheap and ubiquitous communication.

At this point it is impossible to avoid the security issues. To be of any use, email must have a path to an internal machine. This need not be a direct path, and it is safest to receive email at the bastion host before forwarding it on to the internal network.

Bear in mind that newer forms of email, for example those with multimedia content, may contain malicious programs that bypass such measures entirely. The only safeguard is to configure email reading programs not to run these programs automatically unless the user specifically requests it. In turn, it is imperative that the user is educated in the dangers involved and the necessity of checking with technical specialists should there be any doubts.

Interactive marketing and online ordering

The general concept is to provide the remote customer with controlled access to the company product database through the medium of the World Wide Web and its interactive form facility. By using this feature, a specific query could be made and product information returned to the customer on demand, who may then decide to make an order.

For this kind of data, it is easiest to store copies on the sacrificial host machine outside the firewall. In doing this some sacrifice in updating ability may be necessary, since the procedure to change information will be complicated by passing through the firewall, and information may become out-of-sync unless carefully maintained.

If client information is being gathered (for example by online ordering) then personal data may be held on this insecure machine, which is not desirable. Should this be necessary, a procedure for retrieving this data frequently must be implemented. A better solution may be to forward the data immediately to the internal network through a carefully configured channel.

Remote employee access and information retrieval (teleworking)

At this level it is not possible to keep copies of the information outside the firewall. An employee must be able to access the most up-to-date information that he or she may have been working on, and more importantly should have immediate access to colleagues. Effectively, access to the employees' internal accounts needs to be granted. This may be dangerous, as some form of user authentication must be transferred. Systems that automatically change passwords (according to a known but unpredictable pattern) after each access are available and should always be used. Furthermore, even when authorized correctly there is no way to prevent eavesdropping as information is transferred. Again, encryption is the only way to prevent this, but most standard programs available for remote access to an internal account do not support effective encryption at the current time.

To combat this problem a different solution, becoming rapidly more commonplace, is to set up communal communication areas accessible to employees both internally and externally (known as intranets). This is accomplished by use of the World Wide Web protocol, since encryption techniques are better integrated due to the development driven by its commercial potential. This protocol allows a consistent interface to the company and reduces the requirement for separate internal and external implementations.

At a more sophisticated level it is also possible to use dedicated hardware to enforce encrypted security for remote access. A system may be set up whereby a specially configured router will automatically redirect packets destined for a part of the secure internal network out to an external remote network (via the public Internet) after encrypting the data for safety. At the remote network the data will be decrypted and in this way will appear to be part of the original internal network and will have the appropriate authorizations. This high end solution is known as a 'virtual private network'.

Online payment and automation of ordering process

This highest level of integration requires considerable planning. As yet few companies have utilized this option, yet it has the potential to be the most effective use of the Internet overall. This is an integration of all aspects of a company's dealings from the first order through to delivery of a product. This pulls together all of the security issues in the previous sections, and requires controlled access to all of the corporate databases (product, ordering, financial, stock keeping). The weakest link in this chain is the software controlling access to the databases. If this can be subverted in some fashion, for example by tricking a badly designed program into altering areas of a database that should not be public, access to restricted areas may be granted.

For online payments, encryption techniques are already being used to send credit card details over the Internet, although there is still some reluctance by the public to use this service. There are a number of other competing technologies available. Some involve effectively registering with an intermediary to set up an 'virtual account' which can then be used to pay for products on the Internet, with actual real-world financial transactions being the responsibility of the intermediary. Encryption is used when sending details about the account and amounts transferred over the Internet. Others use electronic coded 'tokens' representing money, again linked to a real account. These technologies require both customer and vendor to be known to the intermediary, which has limited their acceptance.

However, there is a distinct likelihood that the credit card companies themselves will be involved with defining the framework for secure transactions. Their infrastructure is already highly computerized, and they have the resources to guarantee online payments in the same way as credit card payments. If this level of guarantee and consumer confidence becomes available, it is certain that there will be few, if any, remaining barriers to full electronic commerce. It is highly likely that these questions will be resolved by the end of 1996.

Ordering information already passes automatically between many of the larger companies using EDI (Electronic Data Interchange) but this requires dedicated secure networks. Research into an Internet equivalent is well under way which will hugely benefit the smaller companies, allowing them to compete in terms of speed and convenience, completing the final link to totally integrated online commerce.

Summary

Computer data used to be highly centralized in a company mainframe, with remote access on very basic equipment. The explosion in cheaper computers have led to far more power on the actual users' desktop, but correspondingly far more inconsistencies and security problems. Furthermore, critical data has tended to become scattered among machines, leading to corporate nightmares when attempts are made to track them down. Having to deal with the Internet has illuminated these shortcomings and is leading to a re-evaluation and partial reorganization of company data.

Although setting up a security policy may demand considerable upheaval, it has significant payoff in safety and efficiency. In the current fast moving marketplace, there are seldom second chances to patch up a badly implemented Internet solution.

Finally, despite the overwhelming emphasis on external attacks through the Internet, it is necessary to remember that generally these are responsible for fewer losses than those caused from within the organization. An airtight technological solution is still only one aspect of an organization's security, nevertheless it is an aspect that is without doubt becoming increasingly important.

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Working habits of six US information science faculty: where does technology fit?

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Colleen Gorman, Jeff Hauke, Marina Will
School of Library and Information Science, Indiana University

Introduction

In June/July 1995, a graduate seminar group in the School of Library and Information Science in Indiana University completed a case study of six faculty members and their perceptions of the role of technology in their work as academic authors. The study is one of series undertaken in a New Technology and Publishing seminar which has been run over a three year period: the underlying approach is a stakeholder analysis of the impact of technology in the academic publishing sector. Previous seminar groups have reported on document supply in 1993[1] and on the role of technology in six Mid-West publishing operations in 1994[2]. The study reported here explores the perspective of authors, and may be of interest to those concerned with the delivery of material to working academics (librarians, learned societies, document delivery services) as it reveals details of working habits that have not been explored extensively in the disciplinary sector of Information Science.

The background

An ample literature over the last decade offers speculation on the future role of computers and networks in the construction of academic text[3]. In the last five years, emergence of a working infrastructure which is widespread in the developed Western economies has admitted empirical studies of working conditions: initial pilot projects[4,5] are now complemented by documentary studies of fully-fledged implementations. In the US, the Digital Library initiative will act as a lever for local and transcontinental development; in the UK, the Follett report on access to digital resources for the University sector has generated a series of seed projects (the e-Lib programme), which should accelerate the development of more homogeneous provision of networked academic services. One problem with reports from experience is the rather partisan nature of the observations: we have views from the LIS community, or from the computer science community. Recent speculation (outside the LIS field) on the digital library[6] defines the institution in terms of a political economy, which controls both the allocation of resources (technical and content) and access to those resources within the constraints of a fixed budget. From this perspective, a group of academics or a department or a commercial publisher will host electronic text, and the library's primary role may be to define the terms of, and ensure technical support for, distribution.

For some years, STM (science, technology and medical) publishers have been involved in collaborative pilots (ADONIS, for example) to assess the market for full-text electronic documents[7]; several major players are participants in the initiatives mentioned above. And Elsevier has been solo host for several years to a number of pilot ventures for the provision of digital text, which, *inter alia*, have explored costing and pricing[8]. A model project has recently been described by ACM, which will implement a long-range plan to publish all of their Track 1 journals (their traditional line of publications which are the majority of their journals) electronically. This year, they plan to bring a database online to accept new submissions in digital form[9].

With a few exceptions[10], articles in the literature have not dwelt on the position of the author, or the author's perceptions of the role of technology in the tasks, and in the social structure of science. The study reported in this paper is concerned with these issues.

The issues

The remit of each individual in the seminar group was to 'identify and interview a practising academic and discuss the role of electronic technology in that academic's published output'. The study was intended to be open ended, with the focus on information gathering versus proving or disproving any theory. It was conducted by means of interview sessions with each subject (in some cases these were repeated) that lasted approximately one hour each. Each interview was recorded and the participant's responses were transcribed.

The interview protocol emerged from a five week intensive discussion of the issues that inform debate on electronic scholarship, based on the literature, and on items on appropriate listservs. This uncovered critical topic areas (roughly grouped under task/environment (including ergonomic factors), and culture (the social apparatus of science, including status).

Table 1a. Functions/Tasks

WORK HABITS									
Technology	Online	CD- ROM	OPAC	Internet Browser	LISTSERV	Word Process	Outliner	DTP	Print Sources
Searching	A?, B, C, D, E, F	A, B, C, D, E, F	B, C, D, E, F	B, C, D, F	A, B, C, D, F				
Browsing	B, C, D, E, F	A, C, D, F	B, E, F	B, C, D, F	B, C, D, F				D, E
Reading	C, D, F	C, D, F		B, C, D, F	A, B, C, D, F				D, E
Cut & Paste	D, F	D	D	D, F	D, E, F	A, B, C, D, E, F		C	
Writing	B	B	B	B	A?, B, C, D? F	A, B, C, D, E, F	D	C	
Sharing Drafts	D			D, F		B, D, E, F			
Collaboration	D			D, F		B, D, E, F			
Referring						B, D, F			E
Submit Manuscripts						B, C, D, E, F			D, E, F
Current Awareness	A?, B, C, D, F	B, D, F	B, D, F	B, D, F	A, B, C, D, F				
Citation Counting	D?, E?, F?	A?, B?, C?				B			A?, C?, E?

Table 1b. Functions/Tasks

WORK HABITS									
Technology	Spreadsheet	Images	Stats	Email	Video	Sound	FAX	Telephone	Printer
Searching		D	B	A, D, E	D	D, F			
Browsing		C?, D, F		D, F	C?, D	C?, D			
Reading		D?, F		A, B, C, D, F	D?, F?	D?, F?			
Cut & Paste	C, E		E	A, E, F				E	
Writing	B, C, D, E, F		B, C, D, E, F	A, B, C, D, E, F			B, C, D, E, F	A	B, C, E, F
Sharing Drafts	E			A, D, F			A?, D	A, B, D, F	
Collaboration	E			A, B, C, D, E, F			D, E, F		B, E
Referring				B, D, E, F			D		B, D, E, F
Submit Manuscripts							D	E	A, B, C
Current Awareness				E, D, F					
Citation Counting									E?

Task/environment issues

The task/environment cluster was broken down into sub areas: understanding of the writing task; understanding of the technology; psycho-motor issues. Writing was construed as a phased process involving searching, browsing, reading, editing ('cut and paste'), writing, sharing drafts, collaboration, refereeing, submitting a manuscript – not always in that order. In framing questions, the group drew on Smith and Lansman's study[11] of academic writing. These subtasks are listed in Tables 1a and 1b, which detail the devices used for each task. Understanding of the 'environment' was addressed in questions abut the local technology configuration, and library habits.

The team also asked questions about usability and acceptability, drawing on the work of Shackel[4] and Dillon[12, 13, 14]. According to Shackel, any new technology must meet three requirements for it to become acceptable: it must at least perform the same functions as old technology; it must provide ways to accomplish new functions; and the new functions must be easy to learn so the additional benefits are worth the extra effort and cost. Factors such as navigation, familiarity, speed and manipulation are all important features that determine whether or not any new technology will succeed. Another specific ergonomic factor to consider is how contents of articles should be constructed for ease of reading on the screen. Dillon in an empirical study of academics reading texts suggests that there is a classic 'IMRD' format of introduction, method, results, discussion 'which acts as a framework or model of the scientific process itself.'[12] If this is not retained in the electronic environment, readers may have to overcome 'this acquired processing tendency of experienced readers'.

Social/structural issues

The scientific publishing tradition is built upon an intricate system of practices, assumptions and standards which dictate how, what, where, and if research is published. This means every author must follow certain procedures in order to disseminate her/his work in a scientific journal. These protocols are likely to constrain the ways in which technology is used by those working within the system. The group considered these issues under three broad headings: quality control, access/visibility, and ownership.

Refereeing/reviewing is the primary task in quality control. This process relies heavily on volunteers, and it can take anywhere from 12-36 months from the time an article is submitted to acceptance and then actual publication. Most publishers also follow three additional policies: the novel submission policy; the no scooping policy; and the proper citations policy. Authors are expected to present new material with little overlap from previously published works by them or other authors. The material must be published before the author may distribute any copies publicly. Finally, proper credit must be given to all who contributed to the work, from previous publications to private communications. These policies add credence to the view that only new and valuable (peer reviewed) articles are published. It is clear that electronic publishing may challenge the policies, assumptions and practices that constitute the current structure of scientific publishing. Authors dissatisfied with the length of time it takes for an article to be accepted and printed now post their papers on the network prior to submitting to journal publications. 'Circulating preprints' is viewed as a way to improve quality, since the works can be scrutinized by more than a few referees.

The archive poses further problems. In order for academic research papers to be valuable to others, they must be visible and accessible. Indexing and abstracting services provide summaries for the articles published, and citation services like ISI allow assessments to be made of the importance, prestige and authority of scientific journals, universities, and individual academic authors on the basis of the number of citations they receive[15]. For a documentation system to be a viable resource for authors, it must satisfy the author's 'need to be read and receive (rapid) responses from colleagues; the need to be recognized – in terms of priority and authority; and the need for reward – in terms of an enhanced professional résumé'[10]. For now, questions remain on what system or resource can be developed to satisfy both the authors' and publishers' needs in an electronic environment. Electronic publications at present are outside the loop.[16]

The group framed its questions on ownership in terms of reactions to copyright legislation. It has become the practice for the author to assign copyright to the publisher; in many instances, work accepted for publication is dependent upon the author assigning copyright. Scholars receive very little in the way of a monetary reward from the publisher: their rewards come from tenure and promotions which are tied to producing articles for publication, in other words, from the symbolic credit afforded by the social system of science. Publishers receive monetary rewards for selling the journals, selling the permission for use in other publications, and authorising photocopies.[4] As electronic formats enlarge the scope of protection, and diversify the means of production and delivery, they raise issues like the following: what part of a work is protected?; is it the entire work, the paragraph, the sentence, the phrase?; at what level does a network manager negotiate licenses at a Web site?[17, 18] It must be observed that insouciance was a marked feature of subjects' responses in this area.

The case study subjects

Six faculty were interviewed, three females (A,C,E) and three males (B, D, F) at Assistant and Associate Professor level. Their length of time in the institution varied from eleven years to two. Three (A,B,C) had

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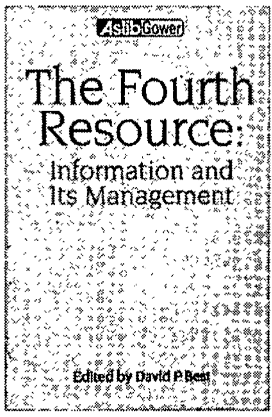

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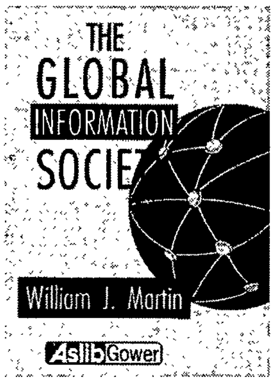

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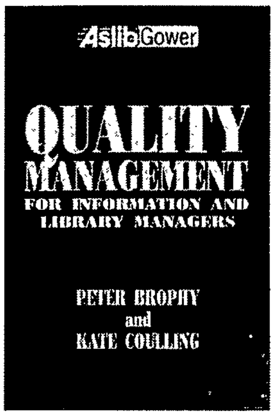
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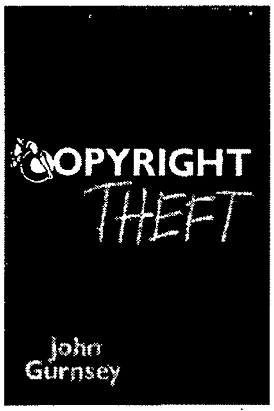

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Table 2. Electronic Publishing: Inhibitors

CONCERNS	CLIENT
Origins of the Author [credit]	C, E, F
Archiving	A, B, C, **D**, E, F
Visibility	A, C, E, F
Relevance to Promotion and Tenure (P&T)	A, B, C, D, E, F
Ergonomics (reading screen)	[C]
Ease of Use (mouse programs)	E
Reaching Audience	B, C, E, F
Standardization	A, E, F
Privacy	[C]
Copyright	B, [C], F?
Poor Quality	B, C, D, **E**, F
Not Referred	A, B, **D**, E, F

tenure (one recently), two were on tenure track with recently completed dissertations (E,F), and one was on tenure track and about to complete (D). (These details are relevant, as they influence the publications patterns/record of the subjects). All had a commitment to publishing.

The subjects' working environment

Two areas which the group discussed and which are highly relevant to the academic library were searching habits and working at home. The subjects have access to a well-stocked subject area periodicals collection in their dedicated faculty library (mean walking distance 30 metres from the subject's desk). They have desktop access to an integrated platform which offers local and wide area access to a range of OPACs and databases, and Internet connectivity. Each individual has access to six hours a week from graduate assistants who are often deployed as an interface to the main library (immediately adjacent to the subjects' faculty offices, and the location of subject area monographs) both as searchers and as gofers. As a group, the subjects appear to be well resourced/sourced locally, and thus geographical distance (often cited as an impetus for electronic traffic) may not be a major issue, unless they wish to access subject material which can only be obtained from another site on campus or across the state.

The School of Library and Information Science has undergone a technology transformation in the past decade. Personal computers arrived in 1987-88 along with the first versions of word processing software. A fax machine was available in another area of the building as early as 1990, but the fax wasn't used regularly until one was located within the department. Email, available up till then through IU's centralized communication system, became available through a LAN in 1991 when the local area network was established. Full Internet connectivity has been available for the past two years. In addition, the SLIS library connected to the department, which is available for faculty and student use, has developed a 'virtual library' within the last year. The goal for the SLIS library is to be a model and leader in its services related to research, teaching and curriculum development in SLIS, to be a credible example of the shift from a paper to an electronic library[19].

The subjects' perceptions of task and environment

Details are given in Tables 1a and 1b of the subjects' specific use of specific devices in relation to the differing tasks that constitute the writing of academic text. What follows is a 'meta-text' or summary of the subjects' observations, which is as much affective as indicative. This text covers two main topic areas: technology and the tasks that relate to writing, and the place of electronic text in the social system of science. Observations on the latter have been presented in Table 2 as 'inhibitors of electronic publishing'. (Where a subject held a strong view on a topic in the tables, their rubric is printed in bold; where they were lukewarm, in brackets; and where they indicated that an issue might be of concern in the future, their rubric is followed by a question mark.)

Technology and the tasks that relate to writing

All of the subjects write directly to the machine, and edit online. Most 'couldn't use a pencil anymore', though one does some draft work with pencil and paper. All of the subjects keep versions or drafts of the developing text, and the point at which these are deleted varies: one subject deletes drafts once the main course of a writing project has become clear, and retains only those relevant to the chosen trajectory. Another puts everything down on screen, and thrashes the arguments out, and then discards irrelevant material. The importance of printout in the draft process varies: one subject retains everything on screen and works solely in that environment; the others work from printout drafts. The local configuration means that most of those interviewed do not have access to a printer in their office (one was happy with this: 'they're hot and they're noisy'); one subject, producing large amounts of text, prefers to print at night. The print set-up is perceived by several subjects as the weak point in the technological infrastructure – two subjects agreed this may be due to their lack of a mental model of what is a complex system (traffic to the printers negotiates several loops in the campus system), but indicated that they felt that they shouldn't need to have one; one subject dismissed such a theory of understanding as 'baloney'.

Five of the subjects do their own searching: the other uses his graduate assistant. Subjects were adamant that self-help made the process more efficient, as they could instantly judge whether stuff was relevant, and it also allowed them to browse; all but one reported that Internet browsing was now their main mode of keeping up to date. Browsing in the stacks is, for four in this group of academics, largely a habit of the past. In one case, Internet is an indispensable resource which allows the subject, an established author of monographs, to update on the subject area and revise repeated editions of highly successful texts. Full text from refereed journals was generally accessed in print form (either in original monographs and serials, or by inter-library loan), and all used graduate assistants to fetch material.

Browsing on the Net offers more than subject area current awareness; three of the subjects use Internet as a way of tracking who is doing what in the field, in terms of calls for conference papers, and descriptions of available research posts. Only one subject regularly checks his citation count in ISI bases.

Three of the subjects work collaboratively: one with a remote partner, one with local partners, and one on a trial basis with a colleague to test certain functions on the net. The remote collaborator uses email, telephone and fax: both he and his partner access remote numerical files, but email of the analysis raises problems as much of what is transmitted uses mathematical and Greek symbols. The subject who works with local partners uses shared files on the local area network. One subject uses email to home in on key issues before starting to research a topic; she observed: 'I guess that wouldn't have happened in the past'.

The refereeing process was addressed from the perspective of an author submitting a manuscript for editorial scrutiny. All of the subjects had submitted material on disk, formatted as requested. None of them had submitted material purely online. All of the subjects had focused on a narrow range of journals to submit to. 'You submit where you've published before'; 'I submit where I know my audience will find my material'. Two of the subjects named sets of target journals: Library Research and Technology Services; Library, Acquisitions, Practice and Theory.

Most subjects described doing 'more of the same' by means of the electronic medium; only one could describe his work as qualitatively different, but innovative work in the publishing front on the Net would not be possible until he had completed his dissertation. Five of the subjects perceived that the networked medium had allowed them increased flexibility to work at home[20]. Home-working patterns were different; one subject prefers to perform certain tasks (which might necessitate a trip to the library, for example) at work. Another prefers to compose journal article texts at home as there are fewer interruptions. Three of the subjects agreed that technology shapes their work as much as they shape technology to their work. Formal general training was not the main means of acquiring technology skills (though three of the subjects had attended any courses on offer); most asked for individual support from the systems administrator when the need arose; others taught themselves to use certain applications or functions within an application on an *ad hoc* basis. ('I use what I need'; 'take things up as I go along'). It is only with hindsight that several of the subjects can see how technology has altered work practice, though a comparative 'outsider', the former faculty secretary, can see a clear shift: publishing faculty do much more of the preparatory and editorial work themselves than they did formerly.

Electronic text in the social system of science

All of the subjects expressed misgivings about the electronic medium as the primary channel for disseminating their research findings. The main difficulties raised were lack of recognition in the tenure and promotion process, lack of a permanent archive, poor visibility, dubious quality, and its corollary, lack of refereeing. Only one subject was seriously considering submitting to a peer reviewed electronic journal in sociology – he has spotted the call for papers on the Net. Two of the subjects, established and successful authors of specialist subject monographs, would not publish electronically as their perceived audience was unlikely at present to be networked. One observed: 'I would want to make certain that anything I was putting out there would continue to be accessible'. Ownership is a related issue: 'The assumption seems to be that if I put something out there I put it out there for everyone. Any changes and modifications can be made and that germ of an idea can be taken by someone else'. In addition to major structural problems, two subjects complained of ergonomic distress – in terms of eyestrain and muscular discomfort. Legal issues were not considered any more of a problem on the Net than in the print environment. Subjects' responses in this area are presented in Table 2, which indicates that concerns relating to the social system of science are inhibitors of the total adoption of new technology.

Conclusions

What is the value of this study in terms of previous work, and in terms of informing local design? Can the stakeholder approach, focusing on issues derived from the literature guide those who develop and allocate resources? Many of the observations of the Indiana group resonate with the comments of a group of UK information scientists surveyed by Davenport in 1992[21]. This may indicate that the pattern of technology use to support tasks, and the perceptions of the role of electronic text in the social structure of science, are influenced less by local configuration than by disciplinary protocols. In an exceptionally well endowed library environment (the case of Indiana compared with many of the UK institutions visited by Davenport) one might expect the library to feature largely in discussion of the activities that surround the writing process. Only one of the subjects referred specifically to browsing the periodical stacks: for some of the subjects of the case study, even the short distance to the collections appeared in many cases to be a deterrent.

The case study does raise obvious issues for academic librarians. If browsing is increasingly a thing of the past, need we retain open access collections? If current awareness can be supported by the Net, do libraries need to support SDI services, and if searching is best done on a self-help basis, should library staff focus on training rather on intermediary work?

Acknowledgements

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Is the business cybrarian a reality? Internet use in business libraries

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Introduction

The Internet is now with us and as a result fundamental changes in information work encompassing the 'virtual library' and the 'cybrarian' are being forecasted. But how much of all this is hype – and have we not all been here before, when online in the shape of full-text systems like FT PROFILE first arrived? And PROFILE has been with us more than a dozen years and, yes, the basic shape of the information service has changed as a result – a little more buying in of the full text and less indexing it yourself. Indeed it was the advent of full text information services that first enabled librarians to run a purely electronic library. Why then should we look to more fundamental changes as a result of the arrival of the Internet? Since business librarians have often been at the forefront of technological and management changes within the information world – the early learners – their experiences with the Internet are of interest to us all. Can they tell us where we are all going? Since the business sector is such a large and multivariate group the assertion has been tested out on just one sector – the banking and finance sector. There are sound grounds for choosing this sector, for it employs more information professionals than any other business field. It is also, perhaps, the most influential business sector since anything that happens in the banking world is soon felt by all those working in other areas. The largest proportion of information professionals in the banking and finance sector are based in the City of London. However, this group contains two diverse banking areas, namely investment and dealing. While many of the target group were involved in in-depth project finance research, others had to answer questions on companies and currencies within minutes. The information professionals in this sector are under intense pressure to deliver quality information at speed. It was assumed that if the Internet was a welcome part of this environment, it would not be long before it was a staple part of any efficient library. And after all, unlike PROFILE, the Internet is free isn't it?

A two-pronged research strategy was adopted in an attempt to answer the questions posed above. Questionnaires were used to obtain broad-brush census-type data. A sample of 70 institutions was generated from a sampling frame of 120. In all 36 responses were obtained, giving a response rate of 54%. Follow-up interviews were held in the case of 16 (42%) of these respondents. Of these interviews, 7 were in-depth face-to-face interviews and 9 were telephone interviews. In addition two telephone interviews were held with two industry experts – Rowan Douglas of WIRE (the World-wide Intellectual Resources Exchange).and Peter Rowland of Lloyds of London information centre.

Use of the Internet

Less than a third (31%) of information professionals working in the banking and finance sector are currently using the Internet (Figure 1). This statistic alone suggests the jury is still out regarding the value of the Internet to the banking community. Most were waiting and watching. This does not mean that business librarians had given up on the Internet for 68% of respondents who were not presently using the Internet said they would being doing so in the future (Figure 2). Even so this still leaves just under a quarter who do not ever intend ever to use the service. These findings very much dovetail with those of the Phonelink market research study of the UK business community, which found that, '72% of respondents feel that the Internet has the potential to serve as a key source of business information.'[1]

The survey wanted to discover more than just whether people used the Internet or not. It was the reasons for using it or not using it that held the most interest. Questioning was focused along two lines of enquiry, in regard to: (1) its value as an information source; (2) the management issues that flowed from its use. Given the strength of the reservations felt about its use it is probably most logical to address them first.

The disadvantages of the Internet as an information source

There is a definite feeling amongst business librarians and information managers that the Internet as an information source, has been *over-hyped* (information services manager). Overall the number of Internet subscribers is growing by thousands every day but

Aslib Proceedings, vol.48, no.5, May 1996. pp.136-144

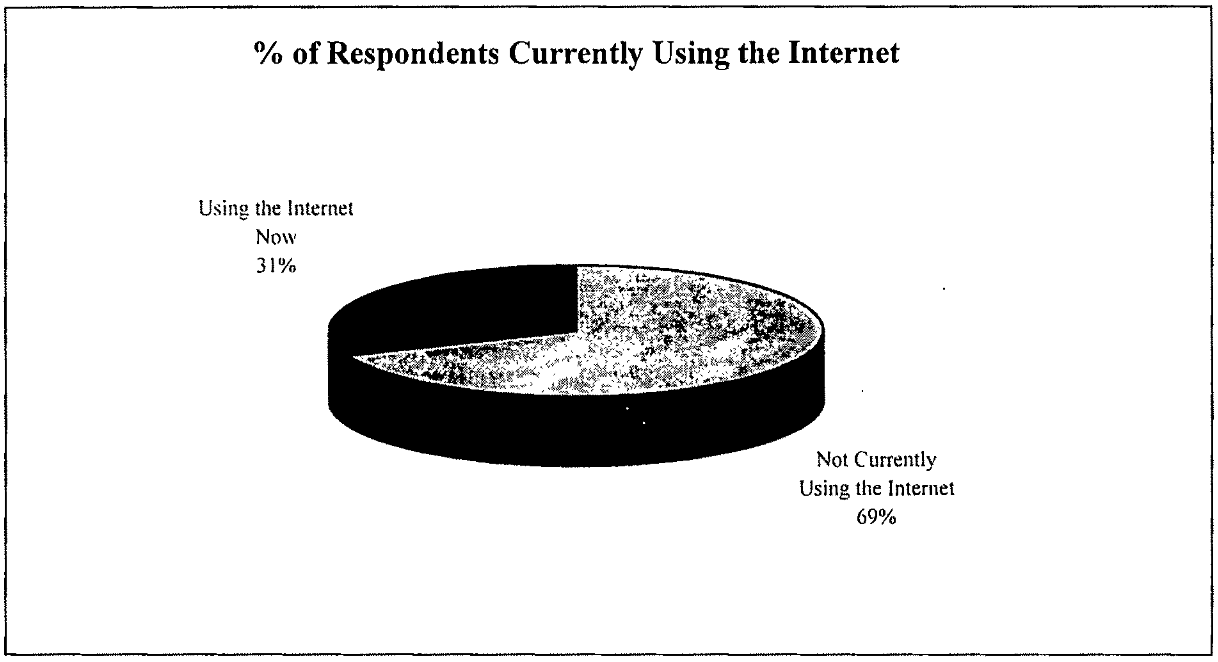


Figure 1.

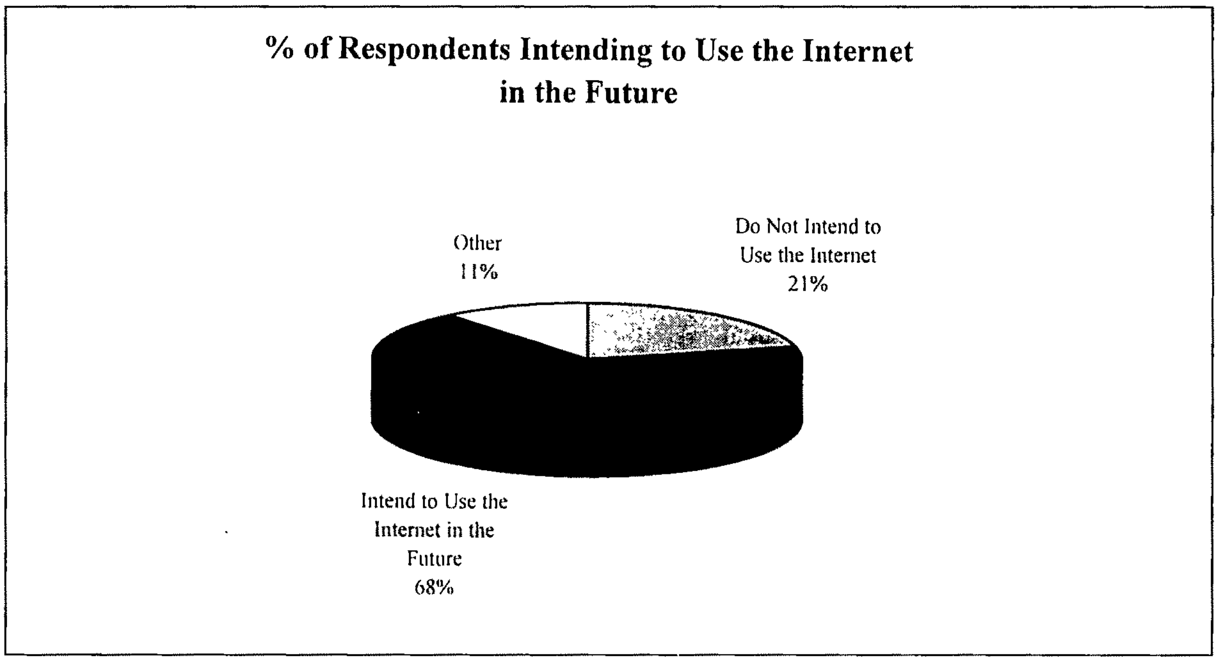


Figure 2.

the amount of useful business information is growing very slowly. While they are keen to keep an eye on developments and keep up-to-date with new Internet sites through training sessions and reading journals such as *Internet*, information managers have not yet been persuaded that the Internet represents a genuinely useful information tool.

Lack of organization

The biggest complaint about the Internet was its lack of organization and structure (Figure 3). It is interesting how information professionals highlight retrieval problems above all else, but that is to be expected. Respondents felt that there was a real need for better Internet directories, created by people with some knowledge of indexing and cataloguing. Many of the present Internet directories have been produced by Internet IT whiz-kids who have very little knowledge of the pitfalls of organizing information. A senior information officer commented that the Internet was at present *a train-spotter's delight having very little bearing on efficient information retrieval.* One librarian despaired that even the UK Government Internet information service had indexed H M Treasury under 'H' instead of Treasury. According to one head of research, The Internet would be more user-friendly if more of its front-end screens were designed by information professionals. This comment brings to mind the words of Thomas Kochtanek: 'The conceptual underpinnings of librarianship, based on the print-on-paper model, can provide valuable stepping stones in the virtual landscape.'[2] In all these comments one cannot but believe that librarians are uncomfortable in what is after all end-user terrain.

Lack of reliable information

After poor organization, lack of authoritative data weighed most heavily on librarians' minds. Inevitably with business people the authority of the data and its reliability are always going to be a chief concern. Internet resources cannot even be relied upon to be in the same place where you saw them last: information *disappears or moves* (librarian), the Internet *is not a reliable information source* (information services manager), the quality of Internet information varies *from site to site* (librarian). If business librarians are to be able to use statistics, for example, downloaded from the Net, they need some assurance that these figures have not be adulterated or re-based. While tampering with information in a sex-obsessed newsgroup may not be noticed, altering World Bank statistics could have a seriously detrimental affect on an inattentive banker or financial analyst. 'The Internet is an area that is extremely vulnerable. It's there at anyone's disposal.'[3]

In business librarianship the source of the data is as important as the data itself. There are very few *recognised* (information manager) sources of information on the Internet. One research librarian believed that, often, it is not obvious how information available on the Internet has been gathered, nor the date of the information – another crucial property of information to the business librarian. The Internet hosts a wealth of information from Eastern European countries such as Hungary but these sources are often lacking in any authority and are therefore relatively worthless. The same librarian believes that the reliability of Internet resources often needs to be verified against other sources. One information researcher believes that it will still be necessary to have access to books and other hard-copy sources to verify Internet information, especially company information.

No real content

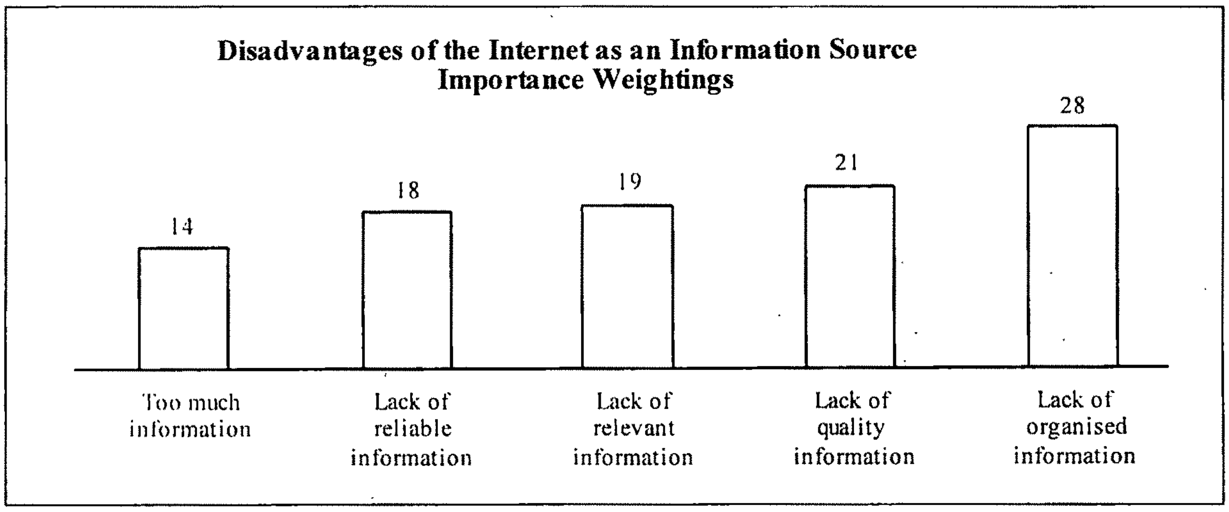
While Internet sites often look exciting at a first glance many respondents found there is often disappointingly little information available. Most Internet sites have been created to market a product or publication rather than to give it away free. There is a lot in the shop window but not a lot in the shop itself. Information providers can usually not afford to give information away in one format for free, and charge heavily for the same information in another format. There are few sources of full-text business information at the moment on the Internet.

Most of the Internet's information sources are publicly available and as such are not as valuable to investment banks, who like to get hold of information before it is available to their competitors and before it is in the public domain. One librarian interviewed, believed that the Internet was not suitable for merchant banks at the moment because it contained insufficient business research. The Internet, according to this librarian, was still very much an academic database, still showing its origins. However, Rowan Douglas countered this view by stating that business information professionals are very bad at *lateral thinking* and that *if a site has not got "banking" in its title, they will often think it is irrelevant*! Of course in the hurly-burly of most business libraries there is not a lot of opportunity to practice lateral thinking.

Too much information

The Internet is for people who have enough time to browse through irrelevant information in search of pearls. But for business librarians this browsing becomes more like *ploughing* (research librarian). Another information manager compared navigating the Internet to *swimming through information.* Many business librarians questioned already complained that they had to sift through *junk* email each morning, sifting useful information and enquiries from garbage. However, of those who answered the questionnaire, 31% were worried *least* about the fact that

Figure 3.



the Internet would give them access to *too much information.*

[The numbers shown on Figure 3 represent importance weightings. Since the questionnaire results were divided between four to seven sets of scores for each possible option, it was decided that an arbitrary weighting should be given to each ranking so that a total for each ranking score for each option could be calculated.]

The advantages of the Internet as an information source

There is undoubtedly some valuable information on the Internet and many business librarians who currently use the Internet have built up their own *portfolio of useful sites* (head of research). And this is surely a way around some of the problems addressed above. In fact librarians are ever looking for more. 34% of respondents saw 'access to huge reservoirs of information' as being the most attractive aspect of the Internet as an information source. The following are Internet resources that were cited as good or useful sites by the business librarians interviewed.

CIA World Factbook
Central Intelligence Agency foreign information
http://www.odci.gov.cia/

CCTA Government Information Service
Links to the Foreign and Commonwealth Office and local government departments
http://www,open.gov.uk/

Economist
Sample data
http://www.economist.co

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http://www.ft.com

HMSO
Details of publications and services
http://www.hmso.gov.uk

Internet magazine
The *Internet* magazine includes lists of URLs under various subject headings
http://www.emap.co.uk/comp/whatson

JP Morgan
Information on 'Riskmetrics' and 'Banking 2000'.
http://www.jpmorgan.com/

Merril Lynch
Econometrics
http://www.ml.com

Standard and Poor's
Credit ratings
http://www.secapl.com

US Government sources
Treasury
http://www.ustreas.gov

Whitehouse press releases
http://www.ai.mit.edu/white-house-publications

World Bank information
Press releases and details of research studies and other publications
http://www.worldbank.org/

An information broker who responded to the survey pointed to a new phenomenon – people actually looking for or requesting *Internet information*, that is, information that they know is (or think is) only available on the Internet but that they have been unable (or too busy) to set about looking for. Although the Internet is presently a 'supplement' to other information sources and 'complementary', this may not be so in three years' time from now. One respondent commented at the end of the questionnaire that she anticipated that *an assumption will grow that if something is not on the Internet, the information does not exist.* Of course, users' experiences of the Internet may lead to them having unrealistic expectations of other information media.

Information for free

Despite the fact that most of the respondents came from financially well endowed organizations, 32% of respondents thought that access to 'free information' was the most attractive aspect of the Internet as an information source. Large pots of data, much of it free, are an irresistible force as far as librarians are concerned.

Competitive information

One of the principal uses of the Internet was for research projects – 47% of respondents said so. One research librarian uses the Internet to track down international organizations or associations that may be of use for particular enquiries. She believes that the Internet is an important source of competitive information because it often hosts the latest statistics or information from an organization before they are able to publish and disseminate it through the normal channels. Some World Bank updates are available on the Internet a long time before they are available in hard-copy format. Internet resources are often more up-to-date than their printed equivalents. And currency matters a lot in business.

Software support

The Internet is a rich source of information on computer manufacturers and software companies. It is possible to download software updates and packages from the Internet, thereby cutting costs and keeping software up-to-date. Several of the information professionals who were interviewed used the Internet to 'keep in contact with software support.'

Communication

Email can be used to communicate with other library specialists as well as other experts. The Internet makes it possible to communicate with anybody who has an email address, whether they are the President of the United States or a NASA engineer. Internet users are less aware of a social hierarchy. It is easier to ask for advice by email from individuals whom informational professionals may not be happy to contact directly on the telephone or by fax. The Internet can be a democratic, informal means of networking. Many multi-national banks already use secure sections of the Internet for communication between their employees because it is cheaper than any other form of communication. As encryption techniques are improved, email will be used increasingly as a standard form of business communication.

The Internet is also a good *delivery mechanism* (European business information officer); it is often quicker and cheaper than the postal system and will, it is hoped, soon rest on a national information structure. The Internet will increasingly be used to deliver research results or reports to users or clients. The Internet will also increasingly be used to order publications and services just as the fax is used now to cut down on time.

Internet – the knock-on effect

Any new technology has it in it to displace an existing technology. When online came along commentators were arguing the death of print-on-paper. Similarly online was written off on CD-ROM's arrival. So what of the Internet? Figure 4 shows the extent to which respondents believe that other information media will be used to a greater or lesser degree as a result of increased Internet usage. In fact respondents appear to think that all forms of media will be displaced, with books and journals taking the greatest battering. Interestingly among the electronic forms it is the newest kid on the block – CD-ROM – that is going to suffer most. Indeed commercial online services seem to have been boosted by Internet's presence.

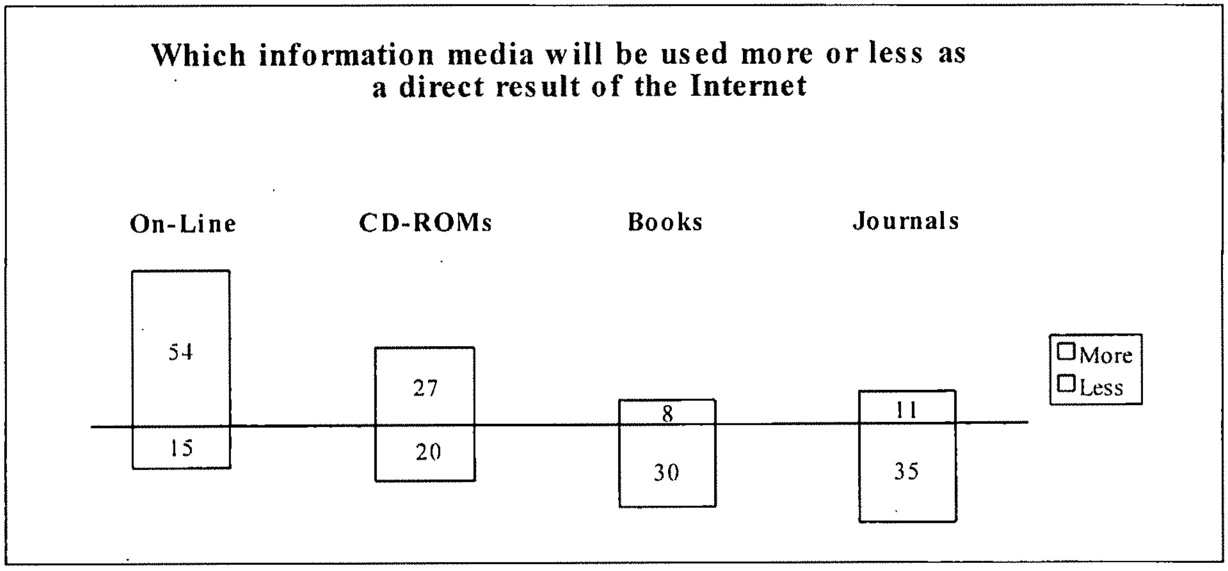
On average, respondents sourced half of the information they gave to users from electronic systems and half from hard-copy sources.

The virtual library cometh?

Despite the waves the Internet was making or going to make most of the questionnaire respondents thought that their library/information centre was 'light years away' or 'nowhere near' becoming a virtual library or a 'library without walls.' One respondent commented that her library was *virtually unchanged* – and she spoke for many. Most respondents conceded that there *will always be a place for reference books and hard copy precedent documents*. Others explained that theirs was already a *library without books* thanks to existing online services, but hard-copy back-up and corporate files were still needed.

Although technological advances are making it easier to move towards a virtual library, users themselves are not keen to access virtual information. One information resources manager's users like to see the hard-copies of journals. They like to be able to take them home. Another research librarian believes that some of her users would despair if they could not take their copies of the *Economist* home in their briefcases. Similarly, if her users were offered access to the contents of an electronic journal, they would print out as much as possible so as to be able actually to 'look' at it. But there are dissenting voices – one head researcher said that electronic journals (or e-zines) are more accessible than hard-copy jour-

Figure 4.



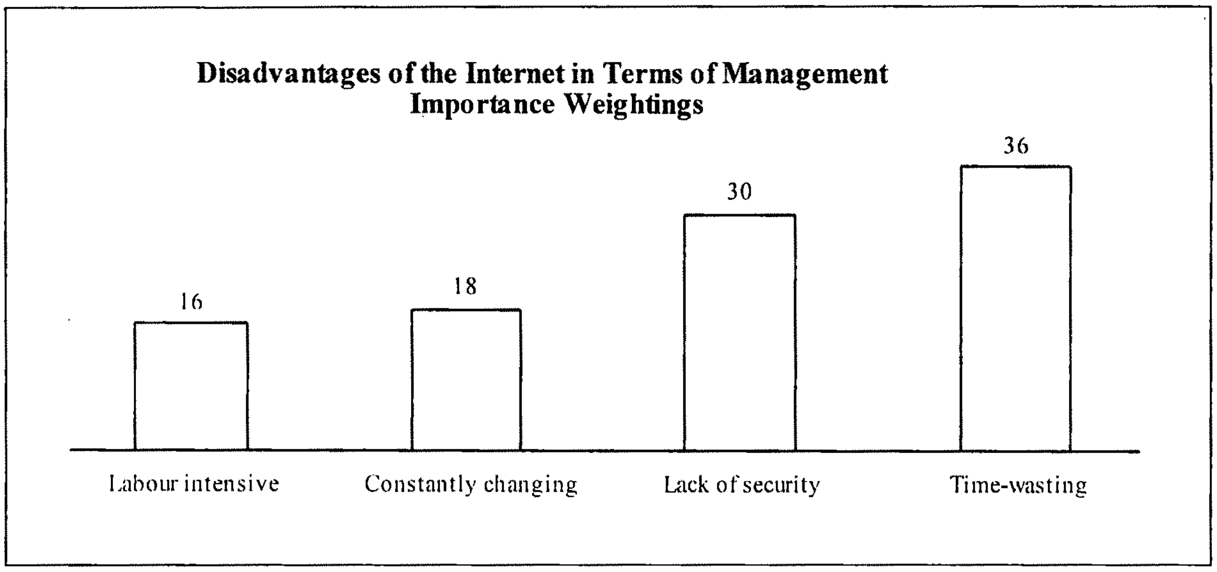


Figure 5.

nals. In defence they said that a particular topic can be found within an electronic journal more easily and more quickly than by flicking through the hard-copy version. Unfortunately, there are still specialist journals and sections of the trade press that provide vital information but that are not available online. However since 'around 35,000 electronic journals are added to the Internet every day, representing some 44MB of information'[4], it may not be long before many of the most popular magazines can be found on the Net.

Online print-outs can be very off-putting for some users because they are not used to looking at long reams of text. There is a real need for a greater use of imaging systems such as ACROBAT that is currently being used by MAID. One respondent still cuts a copy of the *Financial Times* every morning because his users prefer to use cuttings, although he has access to FT Profile if it is required. Many information managers believe that users like to be able to see graphics within a text. Similarly, one information resources manager stated that her users still like to see the hard copy of a annual report from which they can tell quite a lot about a company which would not be evident from a plain print-out. An information services manager believes that her users also like to see an actual 'glossy' annual report as well as Extel cards and Standard and Poor's reports rather than print-outs.

Users often prefer hard-copy information sources because they can browse through them. It is possible to flick through a hard-copy journal. Print-outs from online searching can often only answer specific questions rather than (except by chance) prompting other, unintended directions of thought. Whether people like electronic or paper sources is often dependent on their personalities and their age. Users are generally more 'comfortable' with paper but can be persuaded to use electronic information sources if they allow faster access to information.

The disadvantages of the Internet in terms of management

Figure 5 illustrates in which ways the Internet presents possible management problems – in managing or administering the resource. Two factors seemed to create the highest degree of anxiety – its time-wasting potential and its lack of security.

Time -wasting

82% of respondents thought that 'time-wasting' was the first or second most significant disadvantage of the Internet in terms of management. Business librarians or information managers have limited time to search and track down information for their users. *Speed is crucial* (librarian). The fact that the Internet is so slow at the moment is a big problem for prospective users. In the investment banking departments of financial institutions, users need information *now* (information resources manager) or rather *they want everything yesterday* (information centre manager). One information researcher stated *that everyone wants everything now* and that more and more it is recognised that, *the person with the most information, fastest is the best!* (information researcher) While Internet searching slows down the moment the Americans get up, traditional online sources are not affected by time (except that often their help-desks close down!).

Internet navigating and searching is often slow because of connection problems. Many of those librarians questioned complained that some days they were constantly being 'logged off' and 'timed out' (Information manager). There is not yet a consistently reliable means of Internet access. One interviewee spends much time on the *Net downloading software that will make navigating and downloading easier.* The Internet is a slow information source not only because searching is often cumbersome but because downloading often *takes ages.* (librarian). Many business librarians who responded to the survey thought that it was still easier at the moment to use current online access and payment methods.

Many information managers also felt that using the Internet will waste time because their staff will start 'playing' and looking for things on the Internet that are not relevant to their work.

Security

61% of respondents thought that 'lack of security' was the first or second most significant management problem. Internet access points are thought not only to be a funnel for computer infection, they also make it difficult for users to remain anonymous and untraceable. Searching is not confidential but can leave a trail for competitors. Information professionals should not use the Internet to communicate or search for information that is *delicate* (information researcher) or confidential. A merchant bank librarian also agreed that other merchant banks must not know what information she is pulling off online systems, whether it is a traditional paid-for online system or the Internet.

As a consequence of all this, many business librarians have already, or plan to, set-up a stand-alone PC with Internet access and CD-ROMs. This PC could then be used as a training platform for end-users.

The advantages of the Internet in terms of management

Cost

The fact that it is already possible to download free or very cheap information from the Internet is the reason why many business librarians are keen to gain access. 26% thought that 'access to free information' was the primary advantage of the Internet in management terms. Most companies are using their Internet presence, 'as a shop-window for their product as well as a source of information for customers.'[5] Since it costs money to compile company and market information, it is unlikely that data providers will start giving it away for free on the Internet.

Kudos

Using the Internet gives business librarians a certain amount of kudos among their users. This is probably more than mildly irritating for librarians who have used a vast number of sources in numerous different media such as online for more than fifteen years. One librarian commented at the end of the questionnaire that, *much of the hype about the Internet is written by people who are unaware of CD/Online capabilities.* Despite this, having a business card, complete with email address is an easy way of giving the impression that *I know what's going on and I'm keeping up.* Changes to the image of the library occasioned by the Internet were uppermost in many librarian's minds. 45% of respondents agreed that the 'change in conception of the library as an archive to the library as a bridge to information', would be the first or second greatest management advantage of the Internet. 39% of respondents thought that the 'raised profile of the library/information centre within its host organization' was the first or second most significant advantage of the Internet in terms of management.

The changing role of the information professional

As the number of Internet users increases so possibly will the awareness of the need for information professionals. 29% of respondents felt that Internet use will herald a fundamental change in information work. Peter Rowland believes that many information professionals see this change as a threat to their jobs. He believes that they *want to keep things as they are.* The Internet, 'is another example of the inexorable rise of direct end-user access to information.' As more and more users take to the 'Net themselves, so information professionals will have to establish themselves more and more as *searching experts, as trouble-shooters* (information manager). Sophisticated searching will remain the domain of the trained information specialists despite the fact that end-user access will increase. Information professionals will have to move away from being *conduits to become facilitators* (European business information officer). Of course we have heard all this before – in the early eighties when the opportunities for direct end-use were first presented to users in the form of full-text databases, like FT PROFILE and REUTERS. Presumably information professionals have already adapted for there are no data to suggest information professionals in business, the media and politics (the key fields involved) have suffered in any way. Indeed end-use has generally led to increases in intermediary use as well.

Due to the hype surrounding the Internet, users have high expectations with regard to the Internet's capabilities as an information tool. Information professionals are increasingly concerned by users' perceptions of the Internet. While for years users have underestimated the power of information tools or been reluctant to learn how to use them, they are now fiercely excited about a hotchpotch of badly organised databases. Information professionals will have to learn not only how to navigate the Internet but also how to exercise great tact whenever they are faced with users who swear that 'such and such' will definitely be on the Internet!

The Internet will increase people's perceptions of information and will at the same time underline the value of quality, paid-for information. Information will possibly be recognized as a driving force behind business rather than simply a support. But maybe that is too much to ask?

Conclusions

With less than a third of information professionals working in the banking and finance sector using the Internet the jury is still out on whether it is going to herald the changes prophesied for the information world. Its lack of sophistication and organization is preventing many people from taking it seriously. As too is its lack of substantial business sites. As one respondent said of the Internet, 'despite all the hype the Emperor is in fact naked.'[7] The accuracy and reliability of the data held on the Internet are a concern. It is difficult to assess how reliable it is. In the words of one respondent *the spurious and the accurate will sit side by side without detection.*

Why then do two thirds of those who are not using the Internet now say that they will be doing so in the future? Well, surely the principal reason is that you would be unwise to say anything else about such an unpredictable juggernaut travelling at high speed. However, there is a feeling that the Internet will provide information not otherwise available – grey literature perhaps? Also where sources are available in hard copy and on the Internet, the latter offers the best currency. The attractions of using the Internet for communication between interested parties also figures highly in the minds of information professionals.

From a management perspective the Internet appears to raise more problems than it solves. Time is held at a premium in the business world and not surprisingly the time-wasting potential of the Internet is universally seen to be the biggest management problem.

Searching is often very time-consuming and most business librarians cannot afford to use a slow information medium. They are not interested in the form of information used nor whether it has attractive multimedia graphics. Traditional online systems will continue to be used far more than the Internet in the near future since business librarians are only interested in accessing relevant data, quickly. As Tim Owen has written, 'country lanes are prettier and more fun to drive through. But if you want to get there in time for a meeting, pay a toll and go on the motorway.'[8] Security was second to time in most respondents' management concerns.

Respondents were divided in their opinion over whether the Internet will encourage an understanding among users of the value of information and the value of those that work as information professionals.

So the business cybrarian is not yet a reality. The Internet is, at the moment, a complementary information source. In the future, however, the Internet may become an entry-point to other information sources. Although technological advances are making it easier to move towards a virtual library, often users themselves are still keen to use hard-copy sources. The 'library without walls' is not a reality for most business information professionals. Most business librarians are still reliant on 'just-in-case', stored information.

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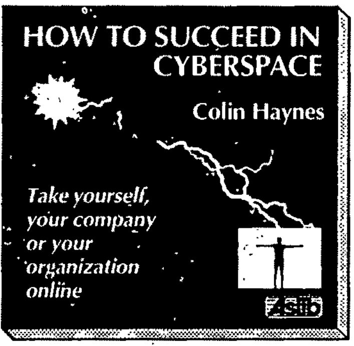

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An EEVL solution to engineering information on the Internet

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Paper presented to 38th Annual Conference of the Aslib Electronics Group, held at Danbury Park Conference Centre, Chelmsford, 15-17 May 1996.

Abstract
The Edinburgh Engineering Virtual Library (EEVL) is a project, funded by the Joint Information Systems Committee (JISC), to develop a gateway to Internet resources in engineering as part of the Electronic Libraries Programme. This paper describes the background to the project and outlines the approach that has been taken to developing the service.

Introduction

Following the publication of the Follet Report[1] in 1993 which investigated how to deal with pressures on UK university library resources due to increasing student numbers and the world-wide explosion in academic information, the Electronic Libraries Programme (eLib)[2] was established. This £15m. three year programme aims to facilitate fundamental change in access to and delivery of information in support of teaching and research within UK higher education. To achieve this end over sixty projects have currently been funded which cover a number of areas including electronic document and article delivery, electronic journals, digitization, on-demand publishing, training and awareness, and access to network resources (ANR).

The Edinburgh Engineering Virtual Library (EEVL)[3] project, which is based at Heriot-Watt University and is being undertaken with the collaboration of six other UK universities, is one of seven projects funded by eLib to improve access to networked resources for the UK higher academic community. Although each of the ANR projects aims to provide a gateway to Internet information resources within a specified subject area, the overall vision is to permit seamless access to resources in all subject areas by allowing end users to search across all the ANR services simultaneously. This facility will be made possible by agreement on standard templates for inputting the data, and agreement on the underlying technological infrastructure.

The need for EEVL

Estimates of Internet statistics have received wide coverage in the media and these vary enormously depending on how they have been collected and analysed. Despite wide discrepancies in the figures there is little doubt that the Internet is growing at a startling rate and is beginning to penetrate diverse cultures, including higher education and research, on a worldwide basis. Some of the available resources are certainly useful for supporting education and research but many users simply do not have the time to search through the labyrinth of networked resources, let alone keep up to date with the continuing cascade of new information. At present the Internet is akin to a chaotic bazaar of worldwide information which is difficult to navigate through, slow to access, of hugely variable quality, and with widely fluctuating stability and availability. Compounding the problem is the fact that many of the search or indexing services currently on offer are non-UK based and are therefore slow for UK users, have poor coverage of UK resources, and include resources on a non-selective basis. UK information is often obscured by huge amounts of worldwide information, particularly that from the USA.

Subject access, especially for new or inexperienced users, tends to be difficult with the options to use either locally compiled lists which are difficult to keep up to date, search engines which can produce a bewildering array of results since Web pages are indexed on an individual rather than collective level, or large resource collections which are often non-UK based and therefore slow to use. Where then does EEVL fit into this crowded 'webscape' of virtual libraries, search engines and resource collections? EEVL does not aim to replace other available tools but hopes to offer a complementary service which will provide a targeted and focused area for resource discovery for the UK engineering academic community. Clearly this will not obviate the need for lists of personal pointers or more comprehensive search engines but it will provide a focal point for the collection of core networked resources and encourage the creation of a more cohesive networked engineering environment within the UK.

Project aims

The central aim of the EEVL project is to enable UK engineering academics, researchers, and students to make better use of available Internet resources by improving accessibility to them. This is achieved by a process of identification, filtering, description, classification and indexing of networked resources before they are added to a database which is freely available via the World Wide Web (WWW). The end result is an organized database of resource descriptions which users can browse or search to identify items of potential interest. Resource descriptions are the most obvious benefit since a user can make an assessment as to whether it is worth connecting to a resource before actually connecting to it. This is in contrast to many current search engines which often provide only title information or cryptic details which have been generated automatically, requiring the user to connect to and investigate each site individually which can often be a time consuming process. As well as improving access to resources, EEVL also aims to increase awareness of the potential of networked information throughout the UK engineering community and to encourage the production of new high quality resources and services.

Project timescale

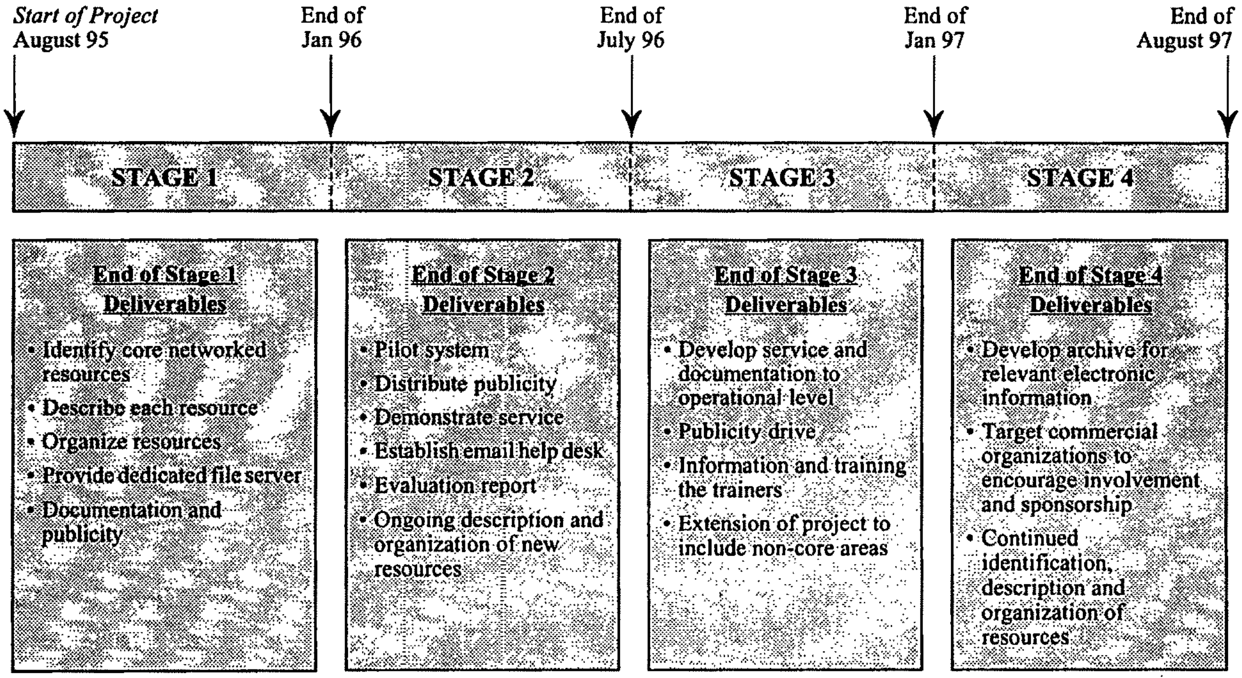
The EEVL project began in August 1995 and is funded via the eLib programme for two years (see Figure 1). Stage one of the project involved establishing the infrastructure for the project to allow members of the EEVL team to submit descriptions for core networked resources to the database via the WWW. A database of core materials is now in place and piloting of the initial system at six UK university test sites is underway.

Resource selection and description

Resources are currently selected by EEVL staff and by Subject Librarians at each of the participating universities who have experience of supporting students and academic engineers. When resources are investigated for inclusion in the database a number of criteria are considered including information content, provenance, authority, usability, durability, reliability of access, and uniqueness within the context of the overall collection. Items which are out of date, inappropriate, strictly local in context or are no longer available are filtered out. Selected resources are described in a short paragraph which attempts to highlight the important features that the user can expect to find at the site. Resources are tagged according to their resource type and are enhanced further by the addition of classification marks and keywords. The classification scheme adopted by EEVL is an in-house scheme which is loosely based on the Ei Classification developed by Engineering Information Inc. This approach was adopted after investigation of a number of gateway services utilising conventional library classification schedules (Universal Decimal Classification, Dewey, Ei) appeared to reveal that many parts of the subject trees remained empty. Rather than adopt an elaborate rigid classification which was originally developed for placing books on shelves as opposed to organizing networked resources, the decision was taken to adopt a more fluid classification which could adapt as broad subject categories fill up. To complete the resource description, other administrative information (location, date created, review date, comments, contact email etc.) is added to help facilitate maintenance of the database (see appendix 1 for an example of a completed EEVL record).

The chief characteristic of the Web is, of course, its lability and ceaseless change, not only in terms of resource location but also in resource content. To

Figure 1. Project timescale



End of Stage 1 Deliverables
- Identify core networked resources
- Describe each resource
- Organize resources
- Provide dedicated file server
- Documentation and publicity

End of Stage 2 Deliverables
- Pilot system
- Distribute publicity
- Demonstrate service
- Establish email help desk
- Evaluation report
- Ongoing description and organization of new resources

End of Stage 3 Deliverables
- Develop service and documentation to operational level
- Publicity drive
- Information and training the trainers
- Extension of project to include non-core areas

End of Stage 4 Deliverables
- Develop archive for relevant electronic information
- Target commercial organizations to encourage involvement and sponsorship
- Continued identification, description and organization of resources

tackle the problem of permanent flux in resource addresses, links in the database will be automatically checked on a regular basis and problem resources flagged for investigation. Resource descriptions will be reviewed on a rolling basis in order to maintain their usefulness.

Scope of EEVLs coverage

EEVL does not intend to include all engineering resources available on the Internet. Any attempt to do so is clearly unrealistic and is doomed to failure. Instead we hope to build a smaller, more focused collection, which will better serve the needs of the UK higher educational engineering community. Bearing in mind that EEVL is a UK-based service for engineers we have given prominence to collecting UK resources which we hope will become a 'comprehensive' collection as the project develops. When investigating worldwide resources our aim is to include resources on a more selective basis, based around such quality issues as usefulness of content, currency, provenance and durability.

There are, of course, a large number of disciplines which are relevant to engineering, and initially EEVL will concentrate resource collection efforts in certain core areas which include Chemical, Civil, Electrical, Environmental, Mechanical, and Offshore/Petroleum engineering. An initial Collection Development Policy has been produced which defines the range of resource types which will be covered by the service. It is expected that this policy will be continually remodelled throughout the project but the following resource types are currently targeted for inclusion:

- Information server – Higher Education
- Information server – Society/Institution
- Information server – Commercial
- Information server – Governmental
- Library Catalogue
- E-journal/Newsletter
- Database/Databank
- Resource Guide/Directory
- Training Materials
- Reference
- Conference/Meeting Announcements
- Recruitment/Employment
- Patents/Standards
- Mailing/Discussion List
- Research Project/Centre
- Software (where freely available)

The EEVL service elements

Although the final format of the service is not yet established, EEVL will provide a similar range of options to those which are provided by the two ANR services which are currently 'live', namely the Social Science Information Gateway (SOSIG)[4] and Organizing Medical Networked Information (OMNI)[5]. The following main elements will initially be on offer:

- Search
- Browse
- Suggest
- Resource for inclusion in EEVL
- Email EEVL

The option to search EEVL will be divided into a simple search screen and an advanced search facility. The simple search is a single text box which provides Boolean search capabilities (AND, OR, NOT) and truncation (*), with the default set as implicit ANDs between each search term. The advanced search option will permit users to conduct more intricate fielded searches providing, for example, the option to limit to only UK resources of a particular type. Browsing the EEVL database via a listing of broad subject headings, which may be further subdivided by resource type, will be possible. Help with search or browse results will take the form of advice on best use of the EEVL database, combined with pointers to further resources which can be investigated if unsatisfactory results have been obtained. A Web interfaced email facility will be provided for queries or comments on the service. It is hoped that the option to suggest resources for inclusion into EEVL will allow users the opportunity to help define the content of the service and to shape its overall development. Involving information providers themselves in the description of resources via a similar 'suggestions' mechanism should help to keep the descriptions as current, accurate, and useful as possible.

A number of additional features and service embellishments are planned or under development including a 'what's new' section, a searchable archive of engineering newsgroups, and a Harvest search index of UK engineering sites drawn from the main EEVL database. EEVL may also host some, as yet unspecified, subject based information services.

Technical overview

The infrastructure behind the EEVL service is a custom built Web server running on a Sun SparcStation 20 Model 71 with 128Mb RAM and 8.2Gb of hard disk. Unlike conventional Web servers which often use a common gateway interface (cgi) program to initiate interrogation on an underlying database, the EEVL server holds the entire database and index in memory and uses multithreading to divide up processor time for each query. The resulting system is not only considerably faster when compared to database searching using a conventional Web server, but tracking the progress of users through the system should also be considerably easier.

Use of EEVL

Systematic research on the use of the Internet, and in particular the WWW, by academics and researchers is still in its infancy due to the relative newness of the medium. Questions such as '*Why* do scholars use the World Wide Web? What kinds of information needs can be best satisfied by the Web? Does the Web complement other more established information resources? Is it used for *traditional information retrieval purposes?*'[6] are not yet well answered. Some initial impressions based on librarians' use of the Internet[7] suggest that it may be considered as a complementary tool to more traditional information resources rather than an information panacea. Bearing in mind the media hype surrounding the Internet and its use, it will be very important to promote a realistic vision of what EEVL can actually deliver.

Conclusions

The explosion in uncontrolled and unorganized information resources on the Internet is making it imperative to develop means of organizing these resources, and in the UK this role is being taken on by the eLib ANR projects. By drawing together many different strands of networked information in an intelligent fashion it is hoped that EEVL and the other ANR services will develop into indispensable and effective services. EEVL will offer a fast local service, UK-biased coverage with selected quality resources worldwide, value added resource descriptions and a user friendly interface. By providing this framework for access to networked resources, EEVL is designed to provide a central resource which the UK engineering academic community can 'own' and influence.

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APPENDIX 1.

Example EEVL Record

Handle:	libmom.815305862
Template-Creator:	Malcolm Moffat
Date-Created:	Thu Nov 02 09:51:02 GMT 1995
Date-Last-Modified:	Fri Mar 29 10:03:48 GMT 1996
Last-Modified-By:	Malcolm Moffat
Title:	Chip Directory
Alternative-Titles:	*none*
Resource-Type:	Service – Resource Guide/Directory
Keywords:	Microchip, Microprocessor, Digital Integrated Circuit, IC
Classification:	Computers and Data Processing, Electronics Engineering
Description:	The Chip Directory provided is a site dedicated to providing information on microchips. There is a numerically ordered listing of microchips and a listing by chip function. Among the other resources at this site is an A to Z listing of chip manufacturers, a listing of chip distributers by geographical region, and pointers to related companies.
URL:	http://www.xs4all.nl/~ganswijk/chipdir/chipdir.html
Location:	nonuk
Decision:	Active
Comments:	
ISSN/ISBN:	
Contact-Email:	ganswijk@xs4all.nl
Authentication:	*none*
Registration:	*none*
To-Be-Reviewed-By:	
Relevance:	2
EEVL-Choice:	yes

The Public Information Relay: long-term solution or half-way house?

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Abstract

Public access to European Union information has become an issue in European Union information policy. The Public Information Relay has been established in the United Kingdom in order to facilitate access to European Union information for the general public. This research project aimed to assess the effectiveness of the new Relay in facilitating public access to European Union information by interviewing some of the key personnel involved as well as other relevant individuals. Several criteria were set against which the potential effectiveness of the Public Information Relay was measured: the general public's opinion of the information they received; the Public Information Relay structure; the Relay members' commitment of resources to the Relay; the Relay members' participation in regional and national networks and the European Commission's commitment to the Public Information Relay. The research explored issues which are particularly relevant to an information provider catering to the needs of the general public.

Introduction

An idea first put forward by the European Commission's London Office has been wholeheartedly embraced by British public library authorities. There are now 147 library authorities participating in what is called the Public Information Relay. The Relay is an ambitious attempt on the part of the European Commission to provide the general public with access to information on European Union (EU) related matters, and in so doing, overcome the biased and uninformed presentation of EU matters in the media. The goal is to make EU information available to the public, and the challenge is to make it available to them in an accessible manner. The beleaguered public library sector have been given a new role, when so many seem to be disappearing, but can it improve EU information provision and, maybe, in the longer term alter the public's attitudes towards Europe?

Aims and objectives

The objectives of the research were therefore to:

- discover whether the Relay is indeed improving access to EU information by the general public. How satisfied are the public with the information they receive?
- evaluate the participating public libraries' satisfaction with the Public Information Relay structure;
- assess the commitment of resources and the commitment of the staff of the participating public libraries to the Relay;
- examine the participating public libraries' involvement in regional and national information networks;
- assess the commitment of the European Commission's London office to the Public Information Relay.

Setting up the Relay

The Public Information Relay is a UK initiative by the European Commission's London Office and is based upon current EU information policy. The London office commissioned a Gallup survey which was carried out in November 1993.[1] It found that 28% of people were dissatisfied when they tried to obtain EU information. This was interpreted by the London office as being due to there being no perceived need on behalf of the public, and a lack of understanding by the general public that the EU affects them. Giancarlo Pau, Head of Information at the London Office, is of the opinion that information about the EU is distorted in the press and by politicians, stating that *they are not actually helping the electorate to be members of the community... they use misinformation for their own aims.* He perceived a need for the public to have somewhere to go to find out for themselves, so that they could form their own opinions, and public libraries were an obvious choice. Indeed, one of the librarians who declined membership of the Relay, stated that he did not join partly because the EU was seen by the public as irrelevant to them and partly because *it would be bad public relations.* Confirming Mr Pau's worst fears, he believed that the EU was not well disposed towards Britain. Suspicion of the EU may be prevalent in some who have the ability to control access to information. However, amongst librarians, this is very much a minority view.

It was acknowledged that there was a *need to target the information at what the demand requires not what we want ... ruling out the use of Eurojargon.* It was accepted that the language used in EU documentation can be an obstacle to its use, especially in the case of the general public. The Public Information Relay set out with the objective that the general public should have access to the information they need locally and if that was not sufficient they could then be put in touch with someone else who could help them further. At the time, the London Office could not cope with the demand for information that it was receiving and public libraries were seen as the most appropriate outlet for disseminating information locally.

In establishing the Public Information Relay the London office was aided by the Department of National Heritage. Its Chief Library Adviser, Peter Beauchamp, became involved in order *to provide a Government blessing* for the initiative. As far as the Chief Adviser was concerned the Relay fitted into the Public Library Review, which encouraged a *proper co-operative network* of information provision. As for the Library and Information Commission, it was too early to say if this would influence the Public Information Relay in any way.

The Federation of Local Authority Chief Librarians (FOLACL) became involved in the initiative at a conference held at Stoke Rochford in 1993 and, subsequent to that conference, became the driving force behind the establishment of the Relay. An expert sub-group was established consisting of three teams: one to compile a list of basic and recommended publications for Relay members to carry; the second to formulate the content of the training programme; and the third to draw up the aims and objectives of the Public Information Relay. FOLACL was also responsible for designing the logo.

Methodology

In order to answer some of the questions posed earlier and to assess how the Relay was shaping up on the ground, a three month research project was instigated. The project was carried out at a very early stage in the life of the Relay, between February and April 1995. Three leading libraries participated in the research project: Bromley Central Library, Croydon Central Library and Manchester Central Library. Bromley and Croydon are situated in residential and business areas just outside London. Manchester is a large metropolitan borough. All previously carried collections of EU information prior to the Relay. Open-ended interviews were conducted with four people from the three library authorities. Two of the public library interviewees were involved at a senior level with setting up the Relay. All were senior staff within their libraries.

Interviews were held at the interviewees' places of work, so a limited amount of observation also took place. Observation took the form of noting how each library supported the Relay. The following criteria were noted: prominence of the Relay logo; layout of the collection; space provided to accommodate the collection; display of the materials; promotion of the unit; whether there was a display of current news items and whether the unit was discrete within the library.

Additionally, information was obtained from the Federation of Local Authority Chief Librarians (FOLACL), the European Commission's London Office and the National Co-ordinating Committee, which is to play a major role in encouraging liaison between the various European Information Relays.

The libraries studied

Each of the three case study libraries had different policies of information provision, which had a marked influence on how they adopted and adapted the EU information initiative. Croydon's main library also houses a museum and arts centre, giving the library a cultural centre focus. The authority's priority is to cater for the whole community whilst developing the area of information technology in libraries. The EU collection was fully integrated, there being no distinction between reference and lending services.

Bromley Library Authority on the other hand put much emphasis on customer needs and as a consequence have adopted a bookshop type approach with facing displays in its main library. Material is rotated around the borough's libraries, ensuring maximum circulation of the stock. They have also instituted client/contractor splits in the management of the libraries, without actually setting up business units, so that the borough maintains control over the library service. Manchester Library Authority's priority is to make information accessible to the general public, which means enhancing access for different groups of people within the community, such as the disabled, ethnic minorities and the visually impaired. All the libraries avidly believed that their priorities lay in catering to the needs for the communities they serve which includes a need for EU information as an official information source. After all, each of the surveyed libraries carried EU information prior to setting up the Relay, although Manchester was alone in having a discrete unit before implementation of the Relay.

At the time of the survey – 5 months after the Relay was launched – none of the libraries had put up the Relay logo. Unsurprisingly, commercial publications were prominent in the three libraries' collections. Croydon's collection was to move to four shelf units in a corner of the library where the logo could be clearly seen. Bromley was to establish its EU information display in their reference library, where it is given plenty of space. At the time, Manchester's collection was the most comprehensive and included information files on selected topics as well as a display board for news items.

Training initiatives

The initial response to the Relay was so successful that the European Commission had to limit places on its training modules to one per authority. There are three initial training modules. The original training programme was designed by the FOLACL Expert Group, but since mid 1995 the National Co-ordinating Committee (NCC) has taken over responsibility for designing the modules. As of July 1995 the NCC had designed three subsequent modules which are now being conducted by European Information Association trainers. The first module was held at the Commission's London office so that library authorities could see both the Commission and European Parliament offices and meet some of the people they would be dealing with. Subsequent modules were to be held at regional locations. One interviewee believed that this inevitably *makes it harder for* [the Commission] *to do any monitoring of the standard of the training throughout the various regions.* But as another pointed out, the European Commission paid the costs of the training programme but not travel costs so regional training is advantageous in this respect.

By the end of March 1995, three sessions of module one had taken place and a fourth was being organized for July 1995. The second module had taken place in the Manchester region in June. The first module consisted of five short talks on the subject of the Relay concept, covering the responsibility of Relay membership; details of the current plans for development of the training programme; details of how to claim the Relay discount from HMSO and the resources available to Relay members. A public librarian was given the role of spelling out the responsibilities of membership. Had this come from anyone else, the impact may not have been so strong.

Module two started from the premise that the attendees did not know anything about EU information. It covered European institutions, the various types of publications they produce and introduced some basic EU information sources and included practical hands-on sessions. Module three concentrated on the subject of EU law and how it is made and implemented, the Court of Justice, how to use complicated legislative material, the *Official Journal* and COM documents. The fourth module, Peoples' Europe will cover subjects such as health and safety, benefits and citizenship. Further modules (such as Business Information and Grants and Loans) will cover issues that are particularly relevant to the requirements made of public libraries. Module four onwards will not be compulsory and can be undertaken by those authorities that would find them beneficial.

Public library resourcing

Budgetary expenditure varied. However, the longest established and largest collection did not prove to be the best funded (just under £10,000). Manchester's budget was not increased with membership of the Relay while Bromley's was. Croydon has an integrated collection so an exact figure was unavailable, for example EU periodicals are included in the periodicals budget. There is no limit specified in relation to EU material. All three libraries provide online and CD-ROM services relating to EU matters although Manchester's unit does not provide public access to CD-ROM services.

Charging is an issue that almost every public library is having to face but in these libraries it is confined to printing and staff searching time on electronic databases. Manchester was the only library that did not charge for staff search time.

Staff time allotted to the Relay varies. Manchester's library has the only dedicated staff, taking two full-time and two part-time staff. Bromley's and Croydon's collections are more integrated, so separate staffing was not thought necessary. And, indeed, a small survey carried out in Bromley's Reference library over a few weeks showed that the actual percentage of EU-related queries was very small (approximately 2%).

Only one public librarian expressed any dissatisfaction with the resources provided by library authorities but this was not because of strained finances, it was due to the service being so well used by the public. EU-related enquiries can be particularly time-consuming, taking up to one hour of a librarian's time. The time factor is an important one and puts a strain on the librarian's time. If the service proves to be well used, a public library authority may well be placed in the position of having to consider provision of dedicated staff for the Relay if this has not already been taken into consideration.

All the librarians demonstrated a strong personal commitment to the Relay; one of these had been involved in lobbying for the institution of such a service in public libraries for some time.

Dissemination of EU-related information

The dissemination of EU-related material varied between the public libraries surveyed. Manchester's unit is the only one which produces a monthly current awareness bulletin providing 220-230 copies a month. This is currently a free service but this may have to change due to resource restraints. A reference folder has been designed for use by district libraries containing information and leaflets pertinent to their needs.

Bromley and Croydon also distribute leaflets to the branch libraries such as the much praised Factsheet series and the Europe on the Move series, although Bromley plan to start a current awareness bulletin free of charge which may form part of the library's business service. Croydon stock *The Times* Guides at their branch libraries. They currently distribute business packs and information relevant to voluntary groups. However, the extent to which public libraries can distribute EU information is limited by resources and limited by the European Commission's London office's supplies of such material, but this is improving.

Development of the Relay

As to developing the Relay, great emphasis was placed upon provision of services suitable for the general public in the belief that European information should be as accessible as other types of information. Manchester Central Library organized a politically unbiased exhibition in relation to the European Parliament elections which received a tremendous response from the general public. From the reaction of the public, the librarian believes that they do wish to find out information relating to EU matters but will not actively seek this information if it is not in a form which is easily accessible to them.

Croydon see their collection as being a service for the business community, as a gateway to a national network of information providers and connected to their role as the information partner for Croydon Business Link.

There is no formal obligation in the Relay contract to promote the Relay save 'to publicize the existence' of the Relay by displaying the FOLACL designed logo and 'through various local events'.[2] All the public libraries indicated that they intended to comply with this requirement. These 'events', as interpreted by the librarians, ranged from formal launches to advertising and articles in local newspapers. However, it is clear that Manchester's experience indicates that promotional displays prove very useful also.

Regional and national information networks

The obligation in the Relay contract that members should foster links with other relays has been embraced by those interviewed. Indeed, this was the most important thing that the public librarians wished to see happen. One librarian also expressed interest in the establishment of an annual Public Information Relay conference (which could aid a monitoring process). One library has established close links with the public library in its twinned city in Germany as well as other European countries with which information is requested and supplied by email. Mr Pau believes that co-operation is needed to ensure sharing of resources and co-ordinated networks of information provision.

The NCC has a role in establishing and co-ordinating regional networks and is now meeting bi-monthly. The committee mainly meets to approve what the sub-committees are doing. It was scheduled to produce a directory in November 1995 of relevant contact names, for example in government departments, for Public Information Relay members. It was also involved in the Consultative Conference on European networks in Edinburgh in November 1995.

It was important to the interviewees that referral between different Relays should take place with agreement about roles, responsibilities and stock. One librarian believed that European Information Centres (EICs) in particular were concerned about the Public Information Relay taking business from them. All three public librarians were actively involved in setting up such regional networks. They also wished to be involved in conferences and seminars. Bromley was already part of an established local network (the South East London Boroughs).

Co-ordination is needed if the Public Information Relay are not going to affect adversely other EU information providers. EICs are especially wary of the new Relay. They find themselves having to charge for their services. With the advent of a Relay that does not charge for enquiry work, EICs may find they have a decreasing clientele. Business people in particular are good at shopping around for the cheapest service. These Centres are also at a disadvantage because they are not so numerous and, therefore, not so easy to travel to than public libraries. European Documentation Centres (EDCs) have their own academic clientele in the universities within which they operate and should not be so threatened. The higher education sector is an area that is currently the subject of review by the European Commission.

The general public's satisfaction with the information they receive

EU-related queries can be particularly difficult to answer and all three librarians have had difficulties in this regard – two admitting that there have been queries which they have been unable to answer. One commented that a query can be *so incomprehensible that it can't be answered.* One librarian stated that part of the problem in accessing EU information for the general public is that *people ... are very specific, you get them what they want but its not really what they thought, you question them further, they didn't really want it in the first place.* These points indicate that there is an information gap: the public are not able to articulate their needs sufficiently because they do not know how EU information can help them. They are not aware of the process by which EU documents come about, what they signify or what they are for, and what is available to be examined by them.

This creates difficulties for the librarians as well, as they become the interpreters of the information for the general public. They are heavily relied upon – *it's not easy to browse* commented one. Even the librarians have difficulty in interpreting EU information and for this reason commercial publications are often preferred sources on EU-related matters. Poor presentation of the information is another problem. This too must improve if the general public's interest in it is to be aroused. None of the libraries repackage EU information themselves apart from the introduction of current awareness services and the European Parliament elections exhibition.

The London office acknowledges that it is necessary to make EU information accessible to the uninitiated, that currently knowledge of the significance of the documents is required and that EU information is too complex for general consumption. The European Commission does have every intention of providing information at a more consumable level. Of the groups of users that use EU information, the education sector is the largest (with students of all ages but particularly A-level and their teachers) followed closely by the business sector then the general public, voluntary groups and local authorities themselves.

All the public librarians interviewed told of problems being experienced by the public with EU information. Problems surfacing included the complex nature of the information available; the manner in which it is published and obtaining very current information on topical issues. The documents were often too dense for the general public, who very often had small discrete queries to pose. People were already sceptical about the quality and authority of the information, suspecting bias. One librarian commented that *the image in the press colours people's perception of the information that they get ... people are often put off before they start looking.* Another stated that it *has got to be easy to understand and jargon free if people are going to bother to even pick it up and take it away.* It was felt that the London office was making some progress in this regard with its Factsheet series.

There was a heavy reliance in all the libraries on commercial publication such as the *CCH Reporter* and *The Times' Single Market* as these are much more accessible and are good summary sources, even to the extent that commercial publications may be favoured over official sources. However, one librarian commented that this criticism can also be made of UK government departments. It was acknowledged by the librarians that the EU have problems with the number of languages into which it is necessary to translate the documentation. Therefore, the level and format of EU information is a recognized problem, not only by information professionals but also by the European Commission itself.

The European Commission's Offices commitment to the PIR

As the Relay has been set up with the substantial help of FOLACL it is to be expected that a high level of satisfaction was found with the resources provided by the European Commission's London office. This has been reciprocated, with the European Commission withdrawing provision of SCAD at the request of the Relay members.

The Commission's commitment is also a financial one. The Relay members receive a 50% discount on Eurobases and on publications from the Office for Official Publications of the European Communities, also known as EUR-OP, as well as free publications from the London office. Discounted material includes such material as the *Directory of Legislation in Force*, periodicals such as *Social Europe* and statistical publications such as *Panorama of EU Industry*. The Relay members have a direct contact at HMSO who act as agents for EUR-OP publications. Chadwyck-Healey also offer 20% discount on the *Official Journal* and *Official Journal Index CD-ROM*. As further proof of the high levels of co-operation between the two bodies, the list of recommended publications was drawn up by the FOLACL Expert Group.

Obtaining information from the European Commission's offices in London and Brussels has been problematic for public librarians, with the London situation improving but responses from Brussels taking six months. One reason could be, as an interviewee put it *before [the Public Information Relay] public libraries were just the general public*!

As regards monitoring of the Relay, the London office's primary interest is to ascertain *how* [the Relay members'] *activities are perceived* [by the general public]; *how people perceive the information.* This is by self-assessment – which makes it difficult for the Commission to determine the real impact of the Relay since self-assessment may not be as objective as third party evaluation. Also if the guidelines are not clearly stated, then confusion may arise as to the nature of the self-assessment required by the European Commission. Delegates at the 'Decentralizing Information on Europe' Conference felt that queries should be analysed to assess the public's requirements'.[3]

Conclusions and recommendations

From those interviewed, there is no doubting the commitment of public libraries to the Relay. Substantial input has been required and obtained from public library authorities and from FOLACL. It is also generally recognized that for the scheme to succeed with the general public the language used in European documentation must be improved. On the whole EU documentation is too formal in nature and the European Commission recognizes that it must address this problem. There is currently a heavy reliance on commercial publications as being the easiest source from which people may obtain the information they require. The European Commission's London office's leaflet series has been applauded by the public libraries surveyed but information emanating from Brussels still, clearly, poses problems for potential users.

The issue of regional networks taking over responsibility for the remaining modules of training is ambiguous. Very clear guidelines are needed and some form of monitoring is necessary to ensure that adequate and equivalent modules are carried out in all regions. It would be beneficial if the modules included a session on the roles of other EU information providers. From the foregoing, this appears to be within the NCC's remit.

The accessibility of public libraries to all sectors of the community makes public libraries an obvious choice as the pivot point for dissemination of EU information. They are also capable of assessing the best types of material that are most appropriate to their users. It is clear from the general priorities of the libraries surveyed that their prime concern is their users and that they recognize a need to attract users to their services. This must also be said of EU information and is borne out by Manchester's experience of their European Parliament elections display.

The extent to which the collection should be promoted is ambiguous in the contract. This, of course, could be something which the European Commission is keen to leave to public libraries to decide, but some indication of the kinds of activities the European Commission would find appropriate, since it is concerned with providing a balanced perspective on EU-related matters, would be helpful.

Students and business are the major users of EU information. The amount of students using public libraries as a source of EU information indicates that their needs are not being met in their schools or colleges. This is an issue that needs to be addressed by the European Commission and, indeed, the review of the EU information provision in the educational sector is now underway.

The NCC is potentially a good source of feedback on how all the relays are performing and a conduit through which any representations could be made to the European Commission which members of the Relay think fit. Should the NCC have a representative in each region, then a system of communication could be formalized between different regional areas facilitating a co-ordinated national network of information providers. However, in order to achieve this, the NCC must establish its authority quickly.

As a process of monitoring and evaluation self-assessment has its pitfalls. Is there any reason why self-assessment could not form one part of the overall monitoring process? Collecting information from different sources should not be discouraged. Obtaining data from HMSO (as the agent for EU documentation), the NCC or the regional networks themselves would be beneficial in giving a broader view of the benefits of the Public Information Relay.

It is difficult to say what potential effects the Public Information Relay could have on other relays such as EICs and EDCs. This will depend upon the way each regional network is established. Referral was mentioned by the public librarians as a means of establishing connections with other relays, but if referral is made to another service that is miles away from the actual point of preference for the enquirer, this would be of limited benefit. If it is too difficult to obtain information the enquirer may give up. Would it not be of benefit to all concerned if some interaction between the relays were established? Perhaps, if a Relay member is unable to help, that Relay could obtain the information from the proper source. There should be no reason why, for example, a library cannot be a client of an EIC, especially where a public library is also a business link information partner. This kind of interaction could also prevent duplication of resources, at a time when all sectors are experiencing difficulties. Again, this may be an area appropriate for the NCC to explore.

Business links are mentioned in the Relay contract as being one of the areas in which the European Commission expresses interest as a regional network partner. Two of the public libraries surveyed have direct interests in their authorities' business links. The Relay could increase awareness amongst local business communities of the work of other providers, such as EICs or, alternatively, the Relay could adversely affect EICs. Therefore, there could be mutual benefits for all EU information providers, but this very much depends upon careful consideration of the regional network concept.

Certain points were raised time and time again in response to the questions posed to the librarians. There is a clear reliance on commercial publications as being more suitable for use by the public. In order to use EU information there is, first, a requirement that the user understands the process by which the information emerges, that is, what exactly each document represents. Therefore, the requirement under the Relay contract that libraries *make official documents and publications of the European Union available to the general public* may not be appropriate for the general public. But, in order to gauge this correctly another requirement of the contract is particularly relevant: that the Relay members *report back on activities and feedback from information users on an annual basis*. It is particularly important that queries are analysed as put forward by the delegates at the Decentralizing Information on Europe conference.

Finally, regarding the questions set out at the beginning of this paper, the answers seem to be these:

- The Public Information Relay can, potentially, bridge the information gap between the public and the EU. No one is better placed to gauge the needs and requirements of the general public than the public library. Each public library authority has a policy under which it disseminates information or makes information available to the public. The interviewees have emphasized the unbiased nature of public library provision. They know their users and are best able to ascertain what would be useful to those in their particular area. This may vary across the country. An inner-city library will have different priorities from one in a small country town.

  There is a general dissatisfaction with the quality of EU information. It is not suitable for use by the general public. The efforts of the European Commission's London office are to be applauded in this regard, but business and education sector users need more substantial information. A reliance on the abilities of librarians is apparent and librarians may find themselves becoming the interpreters of EU information for users. The necessity of understanding the legislative process suggests that poster displays of this process in diagram form may benefit potential users. An initiative therefore that has a large input from those who will provide the service is better able to provide the right kind of service for its users rather than one which meets certain criteria which are set by a Directorate General in Brussels. The European Commission's decentralized policy of information dissemination recognizes this point.

- Public libraries are quite satisfied with the structure of the Relay. Monitoring of the regional training sessions is needed, however, and the momentum must be maintained so that there are no long gaps between training sessions. The importance of providing easily assimilated material is emphasized. There is a clear commitment to the Relay from the public librarians.
- Commitment of resources varies between authorities and is also affected by the size and general priorities of each library authority. From Manchester's experience it would seem to be beneficial to have dedicated staff, and this may prove necessary if the Relay proves popular, especially in metropolitan areas.
- Regional networks appear to be the main way forward. Lack of a co-ordinated policy may adversely affect other EU information providers. It is necessary for the European Commission to maintain a core role in establishing networks.
- The European Commission's London office is following policy as regards working with information partners and widening access to EU information. However, the monitoring process is one area where the office seems to be lacking enthusiasm. Unless, it maintains its interest here, it is in danger of letting public libraries regulate the Relay. This is not desirable if the European Commission wishes to ascertain what the public really needs from EU information.

The Public Information Relay is still quite young but it already constitutes a formidable network of EU information provision. It remains to be seen whether public libraries will succeed. Undoubtedly, they need to. Many already hold EU collections. However, promotion of the service and provision of the most appropriate information sources are crucial. Relay membership imposes a heavy responsibility on public libraries but no-one else is better placed to meet the requirements of the general public.

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Road telematics – revolution or revolt?

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Abstract

The UK road network faces critical problems over the next decade. Severe road congestion made worse by ever increasing vehicle numbers and consequent requirements for road maintenance and repair form a vicious circle, while provision of new roads remains an increasingly expensive and environmentally unacceptable solution. But as billions of pounds are wasted annually in traffic jams, air and sound pollution continue to affect our health and pedestrian safety and emergency service access suffer, we must all recognize that to prevent future chaos actions must be taken now. Some of these measures may be unpalatable to a nation dedicated to the motor car. The use of dedicated electronic systems including route guidance, incident avoidance, in-vehicle signing, head up displays and anticollision radar have the potential to revolutionize every facet of road transportation, and are already starting to provide drivers with new standards of safety, comfort, security, reliability and efficiency. However to combat fully the growing crisis threatening our road system radical solutions must be sought to offer answers for the better management of the UK's road infrastructure for the next decade and beyond.

What is transport telematics?

Telematics: a combination of information technology and telecommunications, allowing the provision of online information in all areas of public and private administration. Transport telematics can be applied to road, rail, air and sea transport to improve safety through the provision of online information to drivers in their vehicles and by equipping the vehicle with computerized systems which assist the driver. It also improves the efficiency of transport by use of electronic systems to improve traffic control and enforcement of traffic regulations.

Overview

The three urban evils – congestion, pollution and noise – are on the increase within cities of both developed and developing countries. At the same time public demand for personal mobility is growing at an even faster rate. The implications are serious for the health of the urban population.

Following a century of intensive development, motor vehicles apparently bear precious little resemblance to the rickety horseless carriages of yesteryear. Even so, their major mechanical components would still be recognized by the brilliant early pioneers such as Benz and Otto – as engines, transmissions, suspensions and even bodies have all tended to pursue a path of steady evolution. At least until now.

In stark contrast, the car's electrical system is now the subject of a total revolution.

A staggering transformation in the way cars work has already brought us breakerless ignition, computerized engine management systems, and anti-lock braking, not to mention mircochip-operated radio cassette players, portable telephones, compact disc systems, in-car faxes, central locking and the rest of the gadgets found in today's executive saloons.

In fact, almost 50% of the major components in today's passenger cars employ electronics in some form and an increasing number of these use full electronic control – 25 years ago even a basic heater was still an option on many vehicles.

The next decade will witness a revolution in road transportation as drivers increasingly rely on in-vehicle electronic systems for traffic information, route guidance and incident avoidance.

These systems will enhance driver safety and comfort and enable the vehicle to complete its journey in the minimum, safe time with consequent fuel savings and reduction in pollution and driver stress.

The intelligent car

The intelligent car of the 'not too distant future' will contain many driver aids and safety features. These include:

- distance measuring radar, connected to throttle, brakes and transmission – automatically keeping a preset distance from the vehicle in front – and stopping in emergency situations
- parking radar/video cameras for all around visibility
- fog sensor using infra red light to calculate visibility range
- video camera identification of lane edges keeping vehicles centred
- vision enhancement using infra red (IR) and/or ultra violet (UV) illumination from additional 'head lamps', projects the image from IR and UV cameras onto the windscreen allowing the driver to 'see' using additional parts of the spectrum.
- head up displays projecting relevant instruments and/or warnings directly up onto the windscreen
- blind spot warning system using IR, radar sensor or cameras

- high speed brake lights, pre-preparing master brake cylinders and intelligent, anti lock brakes that predict when the skid will occur and unlock before it occurs rather than when they actually detect it
- drowiness sensor checking driver is alert
- continual monitoring of driver's performance and adjustment of car performance to match
- identification of driver and adjustment of car performance to match
- alcohol sensor and prevention of use of vehicle
- satellite navigation tied to route guidance with full mapping and 'spoken' route information
- continual monitoring of all road, traffic, weather conditions and adjustment of car performance to match
- seat sensors to prevent airbags inflating if the seat is unoccupied
- side air bags
- automatic windscreen wipers detecting rain
- self closing sun roofs
- tyre pressure (deflation) sensor and warnings
- GSM radio data systems for emergency call out, voice, fax, data communications, including emergency automatic calls in the event of air bag deployment
- automatic tracking of stolen vehicles
- remote door unlocking, allowing essentially any valid driver locked out to have his car paged to open.

In addition to all these systems, two way digital short range communication links for vehicle to roadside data transfer will provide the vehicles and the driver with:

- speed limit information
- hazard warning
- personal messaging
- route guidance
- in-vehicle signing
- continually updated consumer data i.e. next petrol/food/cash machines/hotel (even allowing checking if space available) and will pass back to the road operator details of weather, road conditions and traffic flow.

Information from these systems and technologies can be fed back into the vehicle's intelligent cruise control system, creating smoother traffic flows in busy conditions and allowing drivers to avoid congestion.

The very real problem is that regardless of how good these systems are (or the technologies they employ) they will all be ineffective unless the major issues of congestion and road traffic management are urgently addressed.

Traffic management is the key

It is increasingly being accepted that Electronic Road Pricing (ERP), perhaps more accurately referred to as Electronic Toll Collection (ETC) can provide a solution to the growing number of serious worldwide transportation problems.

Electronic toll collection will be a key element in managing the UK road infrastructure for the next decade and beyond. Since its introduction in the mid 1980s elsewhere in the world it has proven to be an effective mechanism both for demand management and the collection of toll payments and can also offer continually updated and valuable census information on traffic conditions and road usage.

The UK road network faces critical problems with severe road congestion and the increasing costs of road construction, maintenance and repair; these are easily matched by the associated losses suffered by industry as staff and goods are delayed in congestion. Add to this a wide range of environmental issues including increased air and sound pollution, reduced public transport effectiveness, pedestrian safety and poor emergency services access we all face a gridlocked future unless urgent steps are taken to implement effective traffic management.

The way ahead

We must all face the fact that the use of motor vehicles will continue to grow, potentially unchecked over the next decade. We all enjoy and demand a level of personal freedom that is realistically only ever going to be provided by the motor car. One alternative would be to construct endless new roads and motorways, but even if the funding could be found this solution would be environmentally unacceptable.

For many years drivers have paid tolls for bridges and tunnels at traditional toll collection plazas with or without barriers, but realistically free flow multilane systems must be the future for electronic tolling. They completely eliminate the need for expensive toll plazas and barriers (with their associated adverse environmental impact) and they can be readily installed on existing roads and highways.

It is true that the considerable revenue that electronic toll collection systems will generate could be employed to provide far better and more integrated public transport systems but road congestion, exacerbated by the urgent need to undertake major route repairs over the next decade, will continue to grow unless effective steps are taken soon.

Time dependent charging

The electronic toll collection system proposed by GEC-Marconi for the United Kingdom has been designed to allow whoever operates the road system the ability to offer the traveller a simple choice.

If you wish to travel at certain 'key' time (e.g. rush hours) you could pay a small charge based either on the distance you travel or a one off 'boundary' charge: in simple terms a toll for using that road at that time of day. However if you choose to travel at any other 'time' you could pay nothing.

I must stress that this is a personal view, albeit one that I believe is widely held in the industry. Any provider of electronic toll collection systems can only ever offer the eventual road operator, whoever that might be, the freedom and flexibility to adopt this sort of scheme should he or she so wish.

The crucial factor is that any road tolling system must never be guilty of, or even be able to be accused of, 'pricing people off the roads'. The aim of the system solution is simple. If due to road tolling being in operation on a certain motorway only during 'rush hours', one person in 10 decides to use the train, one person in 10 decides to 'carshare', one in 10 decides to travel earlier and one later, suddenly 40% of the traffic will have moved.

Conclusion

The car and the benefits it offers us all make it a fact of life with the average British household sacrificing 14% of its disposable income to run a car, the largest expenditure after housing and food.

Public transport is often quoted as the national solution to the growing transport problem and there is always strong support for more investment and use of it. The common consensus is that *you* should use public transport leaving the roads free for *me.*

In some areas, especially radial journeys into city centres for passengers and heavy freight, public or co-operative transport should be a competitive choice. It will bring about new terms like parkways and freight villages, and the expansion of park and ride and rapid transit systems. All these areas are under active investigation.

The next five years will be critical. The intelligent car may fall victim to cost cutting and competition, while plans for traffic management by use of charging zones and tolls may fall victim to the whims of short term political acceptability.

Today's electronic systems, both in-car and on the roadside offer us, the drivers of the next decade, the chance for a peaceful revolution in road transport.

The road will become a freer and safer place to travel on, goods and the emergency services can get through and you and I will make your business meeting or holiday flight on time. Removing those famous and dreaded motorway jams and queues also brings many other positive benefits including fuel saving, time saving, and a huge reduction in pollution – all this simply by encouraging people to spread the load and make maximum use of the existing available road network.

The alternative must be unthinkable.

Building the lawyer-proof Web site

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The lawyer-proof Web site is, regrettably, either a contradiction in terms or an unachievable Platonic ideal. Whilst it may be possible to ensure that a Web site is reasonably safe under the laws of one country, or even a few major countries, the chances of doing so for every country from which it can be accessed are not great. The ideal of the lawyer-proof Web site also embodies a hidden irony: to approach the ideal the site designer needs to involve a lawyer in the design of the Web site from an early stage, before irrevocable decisions about structure of the site and pathways through it have been taken and implemented.

A hard copy brochure, advertisement or order form can, at a pinch, be shown to the lawyers for clearance after the bulk of the work has been done. Copy changes can often be made without upsetting the overall product. A Web site is different. The added dimension of interactivity and navigation has to be taken into account in assessing the site from a legal point of view, especially if the site owner envisages any form of online trading from the site. Changes recommended by the lawyers may affect the fundamental structure of the site and be difficult and expensive to implement.

What are the areas that need to be considered from a legal point of view? These fall into three main categories:

1. minimizing the risk of being sued or prosecuted by someone else
2. ensuring that the site achieves the desired legal result (e.g. making a contract with a user)
3. protecting the content on the site.

Minimizing the risk

Content liabilities

A Web site may comprise:

- Browsable content:
  - Web pages, consisting of text and in-line or linked graphics glued together by HTML code
  - real-time sound files
  - real-time video (when bandwidth permits).
- Executable content:
  - Java and similar applets executed in real time to form part of the browsing experience.
- Downloadable resources:
  - graphics, sound and video data files intended to be downloaded to the user's hard disk and viewed or listened to off-line
  - screen savers, computer programs and other executable files intended to be downloaded to disk and executed off-line.
- Interactive facilities:
  - response forms and email feedback facilities.
  - discussion forums or other facilities for users to post contributions to the site
  - content tailored to individual preferences or provided in response to specific requests.
- Links:
  - external links to other sites, specific content on other sites, Usenet newsgroups and so on.

The possibility of unauthorized content should also be borne in mind. This may be files residing on the server as a result of unauthorized access by a mischievous or malicious third party. Unauthorized content may be invisible (e.g. hidden caches of pirate software or pornographic materials) or visible (e.g. hacked public Web pages containing unauthorized modifications).

Each of these types of content carries its own risks, which are described in the course of this paper. The liabilities described in this paper are generally under English law. A Web site should be presumed to be published to the whole world. The extent to which advice is taken as to the legal position in other countries is a matter for the site owner to consider.

Who hosts the site? – content risks of self-hosting

The Web site may be hosted by the site owner or by a third party on its behalf. The self-hosted site potentially carries slightly higher liability risks than the site hosted by a third party, mainly because of the risk of the site being hacked in order to stash illegal or infringing material. If something of that sort goes wrong, it is your machine that could become the focus of attention of the police or pirate software investigators.

There may be difficult questions as to whether if some third party placed the infringing items on the server without your knowledge you, as the owner and operator of the server, can be said to have copied or stored it. A Californian court in *RTC v Netcom* recently held that a Usenet host was not liable for infringing material posted by contributors, absent knowledge of the infringing material. It is unclear whether an English Court would come to the same decision. Under S17 of the Copyright, Designs and Patents Act 1988 copying includes 'storing the work in any medium by electronic means', which is arguably wider than the US legislation. But you are at the very least potentially in the firing line if there is infringing material on your server. Also, under English law copying includes the making of transient copies. In the course of operating the server you may be making transient copies of items on the server, even if you do not know they are there.

There is a similar risk with pornography. There have been well-publicised incidents of respectable sites being hacked and used to store pornographic materials.

Under the Obscene Publications Act 1959 it is an offence to publish an obscene article, or to have an obscene article for publication for gain. 'Publication' includes (among other things) distribution, circulation, giving or lending; and in the case of an article containing or embodying matter to be looked at, where the matter is data stored electronically, transmitting it (Criminal Justice and Public Order Act 1994, Sch 9 para 3). The degree of knowledge of the content is relevant to liability. Although it may be difficult to establish that the site owner had sufficient knowledge to found criminal liability if the material is there as a result of the site having been hacked, there is clearly a risk attached.

If the site owner decides to host a set of Usenet newsgroups (the Internet variety of online discussion forum), these bring with them potential problems. The site owner will be storing on its server many thousands of messages and files (including coded programs and images) over the content of which it has no control, changing by the minute. The same concerns as to copyright infringement and criminal liability apply as with material cached without the site owner's consent, only more so. So if it chooses to host alt.binaries.pictures.erotica on its server, the site owner may find it difficult to establish ignorance of the contents of the images. There is also a possibility of liability for defamatory statements posted to newsgroups (see discussion below).

The content liability risks described are those of especial relevance to self-hosting. There are other potential liabilities which apply equally whether you use a third-party host or self host.

Third-party host

By using a third party host the site owner reduces some of the risks associated with publishing on the Internet. Liability for illegitimately cached pirate software or pornography will be the host's problem, not that of the site owner. If the host carries newsgroups, the associated liability problems are theirs, not the site owner's. The trade-off is the loss of control over operating the host. The site owner's public face is in someone else's hands, which should therefore be tied by a contract.

These are some of the general risks associated with putting up a Web site.

Defamation

As the person responsible for the site's content, the site owner is a publisher and liable for defamatory content on the site. If the site owner selects and includes third party material on the Web site, it is almost certainly publishing that. It is very unlikely to have an 'innocent dissemination' defence available to it in respect of such third party material on its Web site, either under the present law or under the new Defamation Bill currently going through Parliament.

The position may be more/less clear if the Web site owner hosts open discussion forums, whether by providing links to Usenet newsgroups or by setting up proprietary discussion areas on the site. The liability of someone who hosts discussion forums is one of the greyest areas of defamation liability law – and one of the most active areas of litigation.

Under current defamation law as applied to traditional print publishing, anyone who has participated in or authorized publication is *prima facie* liable. In traditional publishing terms that includes the editor, printer, publisher, or vendor of the material. But someone who is not the first or main publisher, but has taken only a subordinate part in disseminating it (e.g. the distributor) has an available defence of innocence. The defence is:

(1) that they did not know that the work disseminated by them contained a libel; and
(2) that they did not know that the work was of a character likely to contain a libel; and
(3) that, when the work was disseminated by them, it was not by any negligence on their part that they did not know that it contained the libel.

There is a continuing debate over whether electronic publishers, especially bulletin board operators, are (or should be) treated as primary publishers or distributors.

The answer to the question of distributor or publisher may also depend on what is being done by the operator. The *Cubby v CompuServe* and *Stratton Oakmont v Prodigy* decisions in the USA, both of which concerned online providers, yielded different answers, based on differing degrees of editorial control being exercised by the providers. In the CompuServe case the provider did not exercise editorial control over an electronic magazine that was loaded to its Journalism forum. CompuServe were held not liable. In the Prodigy case Prodigy did exorcize a degree of control (and publicized itself as so doing) over the contents of discussion forums for certain purposes. Prodigy were held liable.

There are many entities doing various different things on the Internet. Their functions and corresponding liabilities may be subtly different. For instance, an online provider which hosts its own discussion groups may be in a different liability position from a mere access provider through which data pass. Anyone thinking of taking and replicating Usenet newsgroup feeds should consider their potential liability. Even if they are distributors, there are some newsgroups which perhaps ought to alert the host to the possibility of their containing defamatory matter.

The position of a Web site owner who hosts a proprietary discussion forum is also not clear. If it is analogous to a 'letters to the Editor' column, or classified advertisements, then the site owner will be liable as a publisher. This is probably the case, at least if the volume of messages is relatively small.

Defamation Bill

On 8 February 1996 the new Defamation Bill was published and given its First Reading in the House of Lords. It had its second reading on 8th March 1996. The Bill is similar, although not identical, to a draft Bill circulated for consultation in July 1995. Inconsistencies in the draft Bill which were widely criticized have been carried through into the Bill. There remain serious questions as to whether the Bill does clarify the position of online providers and hosts, or merely replaces common law uncertainty with legislative confusion.

The Bill preserves and redefines the existing distinction between primary publishers and subordinate disseminators. It provides that a person has a defence in defamation proceedings if they show that:

(a) they were not the author, editor or publisher of the statement complained of,

(b) they took reasonable care in relation to the publication of the statement;

(c) they did not know, and had no reason to believe, that what they did caused or contributed to the publication of a defamatory statement.

The Bill goes on to provide that a person shall not be considered to be the author, editor or publisher of a statement if they are, for instance, only 'involved in processing, making copies of, distributing or selling any electronic medium in or on which the statement is recorded, or in operating any equipment by means of which the statement is retrieved, copied or distributed'. This is the Bill's attempt to specify what kinds of electronic disseminators are to be allowed to rely on the innocence defence, and what they have to do to establish it. Unfortunately, an internal contradiction contained in the draft Bill has been preserved. Many hosts and online providers do more than 'only' operate equipment. They actively promote sites and services and may provide a range of services which add value to the basic mechanical function of operating equipment. Do these activities disqualify the provider from being considered a mere mechanical equipment operator? Even if that hurdle is overcome, how does a person implement whatever steps are necessary to take 'reasonable care' in relation to the publication of a statement, yet at the same time remain 'only' involved in operating equipment?

In one respect the Bill exacerbates this conflict, compared with the draft Bill. Under clause 1(6) of the draft Bill, in determining whether a person had reason to suspect that their acts involved or contributed to the publication of a statement defamatory of the Plaintiff, regard was to be had as to whether the nature or circumstances of the publication, or the previous conduct or character of those primarily responsible were such as to give cause for suspicion that their acts might involve or contribute to the publication of a defamatory statement.

Under the Bill as now published, these factors are also to be relevant in determining whether a person took reasonable care. This could perhaps imply an obligation on the online provider or host to investigate the previous conduct or character of authors, i.e. of all persons submitting contributions to Usenet newsgroups and discussion forums.

Another possible basis on which a person can be treated as a subordinate disseminator is if they are only involved as the 'operator or provider of access to a communications system by means of which a defamatory statement is transmitted, or made available, by a person over whom he has no effective control'. Unfortunately the Bill does not define what is meant by a 'communications system', so whether this would apply to a Web host (as opposed to, say, an Internet access provider) is unclear.

Hosts and online providers are unlikely to feel that these provisions are an improvement on the uncertainties of the existing law.

However, a Web site owner who decides to host any type of online discussion forum should assume that there is potential liability for defamatory statements posted by contributors.

If a site owner allows on its site other third party material over which it has no control and which may change from one moment to the next, it will face similar risks as with newsgroups.

Links to third party Web pages and to newsgroups

Drawing attention to existing defamatory material can constitute publication of that material. It will be a question of fact for the jury in each case whether, by linking to a third party page, the site owner was in fact drawing attention to defamatory material on that page. As a rule of thumb, the more scurrilous the nature of the material or group of pages being linked to, the more likely is liability.

Similarly, providing a link to a newsgroup could be held to be publishing the contents of that newsgroup.

Linking to material that infringes copyright could be an infringement, by authorizing the making of the infringing copy when the user downloads it.

Copyright – territory and format

If you include third party material on your Web site, you need to be especially careful of copyright issues. Does your copyright licence allow reproduction worldwide? If not, what steps do you need to take to restrict downloading or access from unlicensed countries? Does your licence extend to online and electronic publishing?

Trade marks

If you are using any trade marks on your site, be aware of the territorial nature of trade marks and the fact that by putting up a Web page you are publishing to the world. You could be infringing trade marks in another country, especially if you are actively selling goods or services from the site.

Reliance on content – dangerous information

Putting up information on the Web has similar consequences to publishing any other information. People may rely upon it. There is the added element that you are effectively publishing to the world, and your potential liability is most likely to depend on the jurisdiction in which the information is read and relied upon.

Whatever the jurisdiction, it is common sense that information which, if wrong, could cause personal injury or damage to property, requires especial care in ensuring its accuracy and taking legal precautions to reduce the risk of liability. The fact that the information is free does not, under English law, prevent liability arising.

For example, there have been many cases (especially in America) in which publishers of guides to edible wild plants have been sued when a reader was poisoned. None succeeded in America, but a similar case is reported to have succeeded in France. There has been no English case on the topic. Already there are several Web sites containing guides to edible and poisonous fungi.

One can envisage the possibility of liability in the case of medical advice, food recipes, or DIY instructions on how to rewire a house. Liability under English law would probably have to be founded on establishing a duty of care owed by the author and/or publisher to the world at large to take reasonable care to avoid personal injury to readers. There is also the question whether there would be strict product liability under the Consumer Protection Act 1987, although this may be less likely.

English law puts damage to property in a similar category to personal injury for the purposes of establishing a duty of care. Again DIY instructions could potentially found liability.

Where there is no likelihood of death or personal injury, the position is different. English law has traditionally been much more reluctant to impose liability for purely financial loss. It has tended to do so only where someone has assumed responsibility to an identifiable small class of persons for the consequences of the advice given. Professional advisers are the obvious example. Traditionally, professional advice has been custom-made for identifiable clients. But already advice, such as tax tips, is appearing on the Web. If electronic and online publishing enables professional advice to be packaged and made available to a wider class of consumers, that could provoke a change in negligence liability towards enabling a wider class of persons to sue.

The interactivity of a Web site can also blur the line between information and advice. The more interactive the site, the greater the chance that specific information is provided in response to a specific request, leading to an increased likelihood of liability.

It may be wise to take some precautions. In print publishing, it is common to include liability disclaimers at the front of magazines, especially those carrying product reviews and recommendations. Similar action may be appropriate in electronic publishing.

And again bear in mind the international nature of the Web and the consequences in local jurisdictions.

Downloadable resources

If you are making material available for downloading, especially executable files such as screen savers and programs, you may have potential liability for damage caused by those files (e.g. if the file contains a virus). It is wise to make such a download subject to a Web-wrap contract (see below), and to specify the licence terms for use of the file. As the Web develops as a medium for selling digital products, so this will assume increasing importance.

Advertising regulation

The regulatory environment for advertising exists in various forms throughout the world. Tobacco and alcohol are probably two of the products which are the most regulated but there are others such as medicinal products and financial services. For instance, the Securities and Investment Board (SIB) has stated its view that if a foreign company's page is accessible from the UK it falls within the Financial Services Act, which regulates investment advice and advertisements. There are also various regulations concerning the accuracy of advertisements and what will amount to puff and is therefore allowable and what is simply not acceptable as untrue.

For many advertisers the highest common denominator approach will be the only one to follow so as to avoid undue problems in this area but once again one has to be aware of what the parameters for that are and therefore have to have a very good knowledge of the various regulations in this area on a global basis.

The best example to date of the implications of global advertising regulation is the fine imposed on

Virgin Atlantic by the US Department of Transportation arising from an out-of-date fare offer on its Web site.

Data protection

A Web publisher will probably be interested in obtaining two types of information. First, statistical information about accesses to the Web site. So long as this information is not referrable to a particular individual, it ought not to be covered by the Data Protection Act (the raw data collected by the host from which to compile the statistics may be covered, although there are special provisions in the Act covering data held for statistical purposes). Second, information provided by an individual (usually by filling in an online form) may be collected for marketing purposes. This will be subject to the Act, so that the data protection principles will have to be complied with if the data are held in the UK. One of the key data protection principles is the first: that 'the information contained in personal data shall be obtained, and personal data shall be processed, fairly and lawfully'.

Important requirements are that the identity of the data user(s) and the purposes for which the information would be used or disclosed are made clear at the point of collection. That will almost always require notification of any uses or disclosures that the data subject would not necessarily assume or foresee. This is routinely done in print direct marketing. It will also be necessary if information is obtained online. In the *Innovations* case the Data Protection Tribunal made clear that the notification must be made before the information is provided, not later. It will therefore be important to ensure that an appropriate Data Protection Act notice is included if unforeseeable uses are intended, together with the usual option to opt out of the notified use.

Disclaimers and boilerplate on Web sites

Concerns about possible liability for reliance on content lead to consideration of disclaimers. They may or may not work. They may be effective in some jurisdictions but not others. But anyone putting up any sort of information on which someone may rely would be well-advised to include some sort of disclaimer.

Disclaimers are likely to fall into three categories:

1. *Responsibility statement*

   This is a statement making clear what material originates from the publisher and what from elsewhere. This can be particularly important if you have links to third party pages, or if you are acting as an umbrella site for material contributed by others. You will want to make clear that you have and assume no responsibility for third party material. So if you are hosting an online shopping mall, you may want to make clear that you do not endorse the companies, products and services offered in the mall.

   It is becoming common to attach warnings to hypertext links to third party sites, making clear where your site begins and ends and containing the usual warning that the third party site is not endorsed. If there is a possibility that, for instance, software can be downloaded from the third party site, specific warning may be given of the risks of downloading programs from the Internet.

   Bear in mind that a disclaimer cannot have any effect on defamation liability. If you publish the material you are at risk.

2. *Liability statement*

   This is a statement seeking to disclaim or exclude liability for information on the page. It is the closest analogue to the traditional form of print publishing disclaimer.

   Such statements present difficulties. They are likely to be subject to consumer protection legislation in local jurisdictions. For instance, in England the Unfair Contract Terms Act 1977 prohibits the exclusion or restriction of negligence liability for death or personal injury.

   Another approach is to seek to prevent a duty of care arising at all, by rendering it unreasonable for the reader to rely on the information. This approach is often employed on promotional Web sites, where information of a general nature is given. The typical disclaimer will state that the information given is of a general nature only, and that appropriate professional advice should be taken in relation to any specific problem.

3. *Territory statement*

   This is a statement setting out specific territories to which the page is directed. Such a statement would be most common if there were intellectual property concerns in certain territories, or concerns about the legality of the material in some jurisdictions. However, it should not be assumed that a territory statement would necessarily achieve the desired objective. Territory statements are increasingly common on the Web.

Achieving the desired legal result

Web wrap contracts

It is sometimes easy to forget that selling over the Internet involves a contract for a sale of goods or the supply of services, just like any other. In this section, the legal issues of selling and publishing online are considered. These contracts, and indeed contracts designed to impose terms on the user governing the use of the site (whether or not any goods or services are sold through it) are becoming known as Web wrap contracts.

Forming Web wrap contracts

A contract is formed when one party offers to do or to supply something on terms which are accepted unequivocally by the other or others. That acceptance must be communicated to the person making the offer. Some benefit must flow between the parties, but usually this is obvious – one party offers to sell goods, the other to pay for them. There must also be the intent to create a legally binding contract, but this is usually also obvious from the context.

The terms of a contract are generally exactly what the parties have agreed between them, but the law implies a number of additional provisions. For example, the law restricts the ability of a seller of goods to exclude responsibility for the condition of the goods and generally circumscribes the rights of both parties to limit or exclude their liability for breach of contract. The law implies also special conditions where one party is a consumer, particularly when credit is being given to that consumer by the supplier of goods and services.

So, if you want to sell over the Web, how does this legal framework affect you? This can be broken down as follows:

1. *When is the contract made?*

The exact point at which an exchange of electronic messages becomes a binding contract may be of considerable importance, not least in determining what the terms of the contract are. It may be that you wish an order from a customer to constitute the offer which you must specifically acknowledge before there is a contract. This could be the case if there is a danger of stock of the relevant goods running out and you do not want to contract to provide something you may be unable to deliver. You may also want the right to reject orders from known bad payers or from certain jurisdictions. On the other hand, you may be comfortable that the statements on your Web page are the offer and that the order from the customer is the acceptance which brings the contract into being.

The safest approach may be to state explicitly as part of the Web page when the contract is to be formed.

2. *What are the terms of the contract?*

Incorporation of the terms of a contract can be a vital issue for the supplier of goods or services. The supplier will always want to spell out, as far as the law will permit, the limits of its responsibility and any obligations on the customer. However, in order to be part of the contract, such terms must be brought to the attention of the customer before the contract is formed. Looking at existing Web pages, it is clear that there is real tension between the desire of lawyers to force all browsers to read through several pages of legal terms before a transaction can be initiated and the wish of the marketers to allow customers to be able to spend money as quickly and easily as possible and to make the Web page look attractive. Some Web pages simply have a hypertext link called 'terms and conditions' which takes the customer to those terms. It is however arguable whether this would be sufficient as many customers do not follow that particular link. The general principle is that the more onerous or out of the ordinary terms are, the more has to be done to bring them to the attention of the customer. Often it will be highly desirable to have an 'I accept' button which the user must click before it can progress further through the site, after reading the contract terms.

The answer in each case must be to assess the likely risks involved in selling the particular goods or services involved and make a business judgement about how much must be put on-screen before a customer can initiate a transaction.

3. *Where is the contract made?*

The place a contract is formed will often affect or determine the legal system which governs its interpretation and effect. In this regard, Internet contracts are no different from any other international contract. A number of international conventions determine in respect of certain countries the way in which their local laws will apply to contracts involving their nationals.

4. *Who is the contract made with?*

Parties entering into a contract on the Internet may never meet or even talk to each other. In some circumstances, it may be of importance to you to know the identity of the purchaser and/or where he or she is. Obvious examples of when this could matter is the sale of material which is prohibited in some jurisdictions or restricted to certain age groups. You will need to consider what evidence will be sufficient to establish these facts. It may be that the customer will need to provide written evidence of age by post before being issued with a password allowing him or her to place orders over the Internet.

With each of the above issues, the key is to identify the potential risks and to put in place a contract and procedures which are proportionate to those risks. In the case of fairly low value, high volume merchandise, you may be happy to sell without much by way of disclaimer or contract terms and with the minimum of formality. High value or sensitive goods may in contrast only be sold to someone who has already signed a printed contract which will govern future transactions over the Internet.

Web-wrap contracts may also be necessary where certain content is especially sensitive from a liability point of view, or subject to particular regulatory requirements (such as in the case of financial services). A possible solution is to adopt the gated' Web site model, wherein the initial content on the site is freely accessible, but the sensitive content can only be accessed via a gate which displays appropriate information or seeks to bind the user to a contract. This is often a fair compromise between legal requirements and the desire of the marketing department not to deter visitors with screens of legal text.

Protecting content

Copyright notices

Unlike reading a book, reading a Web page on screen involves what, absent permission from the copyright owner, would be copyright infringement. The act of displaying it on screen involves making a transient copy and storing it in the computer's memory. Clearly, therefore, there is some kind of implied licence involved in accessing and reading a Web page, at least to the extent that the use is not covered by the fair dealing provisions of the Copyright Act. In order to avoid disputes as to the extent of that implied licence, it is sensible to include a clear copyright notice on the Web page together with an express, limited permission.

Contracts between content providers and Web hosts

To understand some of the issues that arise, first look at what a Web host is and does. The host is a computer connected to the Internet. It must provide two key facilities: disk storage space and bandwidth. The storage space is simply the amount of disk space that the customer's Web pages occupy on the host's computer. A small company's Web site might occupy up to 5 megabytes. Many Web site providers charge simply by the megabyte. However, that is only half the story. Not only must the provider supply adequate storage for the Web sites on its host computer, but it must also provide a wide enough 'pipe' to handle the traffic to and from the host. The pipe is simply a telephone link to an existing point on the Internet. The capacity of the line is known as bandwidth. A typical access provider will have at least a 64kb telephone line, and may have much more. The appropriate capacity of the telephone link will depend on how many sites the Web provider is hosting and on how popular those sites are.

To date, disk storage has been cheap and bandwidth expensive. That may create a temptation for hosts to underprovide bandwidth, causing users to encounter delays in accessing the pages. A slow Web site will damage the advertiser's reputation. Users will give up trying to reach the pages. Even if the host genuinely attempts to provide sufficient bandwidth, what happens if one site on the host becomes extremely popular? What assurances does the advertiser have that the host will manage or increase the bandwidth to allow proper access to all sites on the host computer? Drafting a provision in the contract to cover this is not necessarily simple. Accesses will fluctuate across the day, so the clause may need to deal with peak-time availability. Most providers specify a maximum number of accesses per day, with surcharges above the limit.

Bandwidth – defining the host's obligation

One way of approaching the bandwidth issue would be to oblige the Web provider to maintain a telephone link to the Internet of a minimum capacity. However, although simple this does not fully address the issue. The appropriate size of link depends not only on the traffic accessing the customer's own site, but also on the number and popularity of other sites on the same host. It will also depend on the traffic patterns of the various sites, as these will affect peaks and troughs of demand to the Web server. A 64kb line may be adequate today, but inadequate in six months' time when the provider has taken on more customers.

A better way of addressing the issue is with a service level obligation. This seeks to define the speed and quality of response from the site to someone accessing the customer's page. How the Web provider achieves that result is then no concern of the customer. It will also cover important issues such as response times within the provider's own computer system, as well as in the pipes. This approach has its own difficulties, as response times and availability are difficult to define and test. An added complication for a site on the Internet is that the requests and responses are carried via networks over which the Web provider has no control. This means that the Web provider will (if well advised) assume responsibility only for response times at the host. Delays between host and user will then be at the customer's risk. These issues have parallels in other types of contractual arrangements such IT outsourcing, telecommunications and telemarketing. Experience in those areas may become increasingly relevant as Web provider contracts become more sophisticated.

Downtime and backup

The customer's contract should also cover downtime and backup. A provider may specify '99.5%' availability. That needs to be tied down carefully. Over what period is the availability measured? A site could go down for a whole day, yet still meet 99.5% availability measured over a year. Is there a back up computer if the main one goes down? What if the telephone link to the Internet goes down? Is there a back up? Is telephone line downtime included in the availability obligation, given that the provider probably only leases the line from a telephone company?

Portability of Web pages

The customer should ensure that its Web pages are portable, in case the service provider goes out of business or does not provide a satisfactory service. So if the Web site provider is also designing the Web pages and coding them the customer needs to ensure that it has the copyright and related rights in the all aspects of the pages: the design, any text specially written, any graphics, and the coded version of the pages. The customer would be wise to specify that a full set of the Web pages is delivered in electronic form, so that it has a fully portable version of the pages in case of need. The key is to have both ownership of intellectual property rights and physical possession of a copy of the pages. Difficult issues will often arise regarding the ownership of intellectual property rights in the program scripts underlying the HTML pages. These will require careful negotiation with the designers. These issues will become more complex with the advent of executable content such as Java applets and the question of rights to those applets.

Liability indemnities

If the Web provider is alert to its potential liabilities, it will seek assurances from the customer that it will not include any material in its pages that infringes anyone else's rights, is defamatory, or could in any other way result in the Web host provider incurring liability to a third party. It will probably also seek indemnities from the customer to cover any liability of the Web site provider arising out of the content of the customer's Web pages. The customer in turn should be alert to a request for such indemnities and review them carefully.

Data protection

If the page is fully interactive, users will be sending information electronically to the host, to be passed back to the advertiser or perhaps to be processed on the advertiser's behalf. The contract will need to address the host's obligations to carry out these tasks, together with the Data Protection Act issues that will almost certainly arise. The Web host provider will also be collating statistics on accesses to the site. The contract should address form, content, frequency and timeliness of statistical reports to the customer.

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PUBLISHING A SCHOLARLY JOURNAL ON THE WORLD WIDE WEB
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Publishing a scholarly journal on the World Wide Web

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Paper presented at ELVIRA '96: 3rd International Conference on Electronic Library and Visual Information Research held on 30 April - 2 May, 1996 at the Hilton International Hotel, Milton Keynes.

Abstract
A brief review of the functions of electronic journals is given, together with an overview of a new, World Wide Web-distributed electronic journal: Glacial Geology and Geomorphology. *This is a 'pure' e-journal, with no paper version, and is peer reviewed. It can be viewed as a subscription into a milieu which has a variety of 'value added' capabilities. This system is intended to set the pricing structure of this journal to offset some 'load' from libraries to a larger set of subscribers paying a small fee to gain access to the journal and its associated features (its milieu). This milieu includes access to an extended abstract as well as discussion group. Definitive, scientific papers are distributed on a pay-per-view system. A number of issues relating to the implementation of the e-journal are reviewed. These include the advantage of having material presented in colour and the personal disinclination to read from a VDU screen. From a library point of view, there are advantages in space conservation but difficulties in access and payment method. The overall advantage of electronic journals, however, is that they can be adaptive and evolve to changing trends in personal and library utilization of large volumes of information.*

Introduction

The last year has seen a wide variety of opinion on electronic journal (e-journal) publishing aired in books[1] and with electronic versions of various views available on the World Wide Web[2]. The significance of this debate, however, is not that electronic journals will gain in popularity so much as in the nature of the electronic publication (e-publication). The use of traditional publishers, pricing structures, peer review processes etc. are all at issue. Some of this discussion has even migrated to the pages of the *Times Higher Education Supplement*[3] and the *New Scientist*[4]. Yet, for most academics, the style of electronic publishing is hardly an issue and the medium is still only pursued by a few enthusiasts. For librarians, however, the style of electronic publishing is of considerable significance[5], not least to view potential trends and for conserving resources. The difficulty, of course, is in making sensible predictions that can be used to plan the development of library services with any confidence.

In this paper we discuss some possible trends in e-publishing by using the recently started e-journal *Glacial Geology and Geomorphology (GGG)* as an example[6]. We shall cover:

- some aspects of e-publishing in an academic environment
- the nature of *GGG* as a peer-reviewed, e-journal
- the reasons for producing it on the World Wide Web (WWW)
- problems as seen from the academic viewpoint
- problems as seen from the librarians' viewpoint.

Some initial results from a questionnaire sent to potential users: academics and librarians, are used to identify problems and to indicate future directions for e-journal implementation in libraries.

Scholarly electronic publishing

Academics have long awaited fast, electronic publishing. Yet so many false dawns have appeared that there might well be justifiable scepticism in any attempt to start an electronic journal, even in 1996. However, the mass networking of institutions with high speed, wide bandwidth links (Information Superhighway etc.; Superjanet in the UK HE sector) and 'Internet' provision world-wide, now provides the medium for rapid widespread dissemination of 'information' in general[7,8]. Within this electronic framework, which has grown apace in the last two years, several scenarios for e-journal publication could develop and evolve. This development is driven mainly by technology with motivation clearly provided by some individuals. However, the response by readers and authors, publishers and learned societies, readers and librarians will have to adapt to technological pressures. We believe that, given ubiquitous technological developments, libraries will play an increasing role in the evolution of e-journals, especially as they move towards a document delivery-based rationale. There is a partnership to be developed between publishers and libraries, authors and users. One way that this can be mediated is via the electronic journal and electronic communications. Indeed, it is possible that 'just in case' and 'just in time' scenarios for periodicals are not irreconcilable. This paper is a contribution to debate and decision making by showing how one e-journal is being developed within technological advances and adapted to suit the needs of individual readers, authors, publishers and libraries.

Electronic journals defined

We consider an electronic journal (e-journal) as being a version of a traditional (print on paper) journal which is disseminated electronically in some form directly to the end-user. In this, it clearly differs from an electronic intermediary file sent from publisher to printer, such as a TeX document. The journal may also be an electronic version of an otherwise identical print-on-paper (pop; paper products) journal. We call the latter a 'hybrid' e-journal as distinct from a purely electronically-transmitted journal. 'Pure' e-journals have attributes which offer advantages and disadvantages compared with pop-journals or even hybrid e-journals. An example of this is described below. Unless otherwise stated, we retain the term e-journal for a purely electronic journal. The scientific nature of material in such a journal is, however, similar to that of any traditional paper journal. The journal may or may not be refereed but, in common with *GGG* (as discussed below), we shall assume that it is.

We do not consider that the term e-journal should include formalized or semi-formalized discussion groups, either on the WWW or via e-mail bulletin boards. However, some authors[9] do include these more informal communication modes but we consider that a stricter e-nomenclature is required.

The nature of much material in geosciences is visual; as well as graphs, tables etc. there will be rock specimens, geological thin and stratigraphic sections to view. Recent developments in mapping (Geographical Information Systems and digital terrain modelling) and satellite imagery now almost demand colour images in scientific and technical publications. This is not dissimilar from other scientific disciplines. Delivery of colour images by print-on-paper journals is difficult without still higher costs or high page charges. The WWW can provide a means of colour viewing (even though the screen resolution might not be very high) and document delivery. The bandwidth available allows easy distribution of such images world wide. Expansion of the Internet is rapid, and browsing

servatism of academics is seen in a variety of questions we have been asked about *GGG*, particularly by academics. Some of these are eminently sensible, for instance, where will the definitive ('Urtext') be held, how will archiving be achieved? We shall touch upon some of these problems and several potential solutions. It is clear however, that, as journal producers, we shall have to supply a product which is easy to read both on screen and off (by printing out!) as well as give a quality appearance and content. The WWW does provide a manner of flexibility for successive approximation to 'user friendliness' and an adaptability which is not available to paper products. One advantage, from an academic viewpoint, is the ability to browse electronically and to be alerted to new papers and information in the widest sense. Such desk-top capability might result in fewer academics going to libraries. Other consequences of electronic delivery are already evident. For example, there is no need for specific publication dates as an electronic 'alerting service' to subscribers can be used; WAIS-type searches can be performed through selected electronic bibliographies, this should also be possible with electronic journals. It is possible that, to some extent, this may even replace electronic bibliographic searching in time. Similarly, page numbers are unnecessary as whole text searching of an e-journal is possible. Citation of electronic media is itself a problem but procedures are in place for this[11] although WWW citation is still a new phenomenon. In the e-journal discussed below we use a traditional Harvard system with an approximation to this for electronic media. In other words, paper preparation for an author is still as 'normal' in almost all respects.

A concomitant problem with the technicalities of electronic transmission (from the point of view of author, editor and publisher) is concerned with the nature of academic communication in its own right. We consider this as a separate problem but one which can be tackled at the same time as several technical aspects. One difficulty academics face is sheer information overload. Indeed, it could be argued that bibliographic searching may increase such pressures on the academic. A tailored search procedure (as suggested above) could reduce this,

[redacted]

be printing of only material required. With decreasing hardware costs, cheap colour printers for example, this will be less of a problem with time as the advantages of colour representation are not lost. In terms of saving trees, the information printed will be that actually required and not 'just in case'.

It has been argued that not everyone has a computer on his or her desk. In the developed world this is, we assume, becoming less significant each day. The main advantage of electronic media, as the world becomes increasingly 'wired' is that a worker in a remote place could have access to an e-journal whereas the nearest library which contained a print version could be thousands of kilometres away. The e-journal, from this point of view alone is actually liberating; ever-expensive books and journals are not. This applies to isolated academics and academic communities whether in impoverished traditional libraries or over-wintering in Antarctica.

Glacial Geology and Geomorphology

Over the past year we have been developing a new, 'pure' e-journal, *Glacial Geology and Geomorphology (GGG)*. A mock up version of this has been on a Web site for several months and is being developed further. The first publication of (refereed) articles was at the end of March 1996. This is published under the auspices of an academic society (the British Geomorphological Research Group) by a commercial publisher (John Wiley and Sons Ltd). As well as refereed papers, technical notes and consequent discussions we are also offering a more informal section for 'Fieldwork Notes' as well as a 'discussion area' which approximates more to a bulletin board. Thus, within its larger purview, *GGG*, is more than a pure e-journal. This wider context we term its 'milieu'.

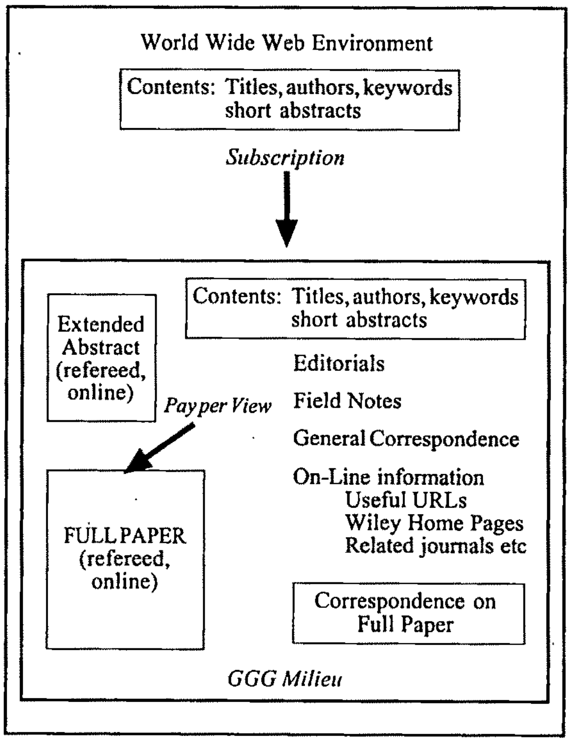
We have considered it necessary that the academic integrity of an e-journal such as *GGG* must be upheld by conventional peer review. At present, this is covered by 'snail mail' as well as electronically, but with e-mail alerting for reviewers when possible. Fully electronic implementation of peer review procedures presents problems which are not yet solved. For example, we are experimenting with a 'private' WWW channel for reviews and also for final version checking by authors and publisher's copy editors. Following usage and recommendations published by Weller[12] we are using 'double-blind' refereeing wherever possible and this is being provided by electronic arrangements. We shall also be experimenting with simple video-conferencing for refereeing and editorial board meetings in addition to the e-mail communication as at present.

It has been asked whether this is an appropriate time to launch a completely new journal. Aside from the identified gap in the intellectual 'market', the approach taken by *GGG* is, we believe, quite radical and aims to use the technology now available in the best possible way as well as accommodate a variety of needs in an academic community. Thus people interested in things 'glacial geomorphological' can be extended beyond that of the strict e-journal to the wider milieu of the *GGG* Web Site Home pages which includes a discussion area, news etc. This extended area has implications in terms of costing the project.

Scientists have long felt that there is too much literature to read. J. D. Bernal commented on this as early as 1939[13]. Further, he suggested that much of what was published, 'possibly as much as three quarters' was of little value anyway! Without arguing about the percentage of what is 'useful' literature in the 1990s, an enormous amount of literature must certainly be viewed. This is one reason why academic journals have refereeing; to reduce the amount of needless literature searching and reading. A quality, peer-reviewed journal is a means of identifying 'must see' literature. Hence it is one major reason why authors still want to publish and use refereed journals. Despite the proselytising by Hamad[1,3,14] for a 'discussive' type of publishing (his subversive proposal), the more conservative scientist may well prefer well-tried (even if disputed) refereeing procedures and a standard, print on paper format.

Thus, *GGG* is intended to bring the traditional procedures of the peer-reviewed scientific journal together with the benefits of electronic delivery and a variety of extra facilities. Figure 1 shows the basic configuration of the journal and its associated parts which can be viewed at several different levels within the *GGG* 'milieu':

Figure 1


World Wide Web Environment
Contents: Titles, authors, keywords short abstracts
Subscription
Extended Abstract (refereed, online)
Contents: Titles, authors, keywords short abstracts
Editorials
Payper View
Field Notes
General Correspondence
On-Line information
Useful URLs
Wiley Home Pages
Related journals etc
FULL PAPER (refereed, online)
Correspondence on Full Paper
GGG Milieu

1. as title, author(s), short abstract and keywords on the WWW. This is free and obtained directly on the WWW site Home Pages
2. as an extended abstract (approximately 2 pages) which can be viewed for a subscription (a relatively small sum) to the journal. At this level, it is also possible to access:
3. a pay per view system for the full article. This can be charged in several ways.

These three levels (two of subscription) are seen as commensurate with the information needed by the reader. (Charging mechanisms are being reviewed and set up as part of the research project but will not be discussed here.) This is only one model of several, but we believe that it makes for a flexible response to demands which we shall fit in (as far as possible) with the needs of libraries. Subscription possibilities include: site licences for individual libraries, full subscriptions, pay-per-view, or some hybrid system tailored to the needs of individual institutions and users. The e-journal format obviously lends itself to treatment as a piece of computer software and negotiation as such. However, this is only one aspect of e-publishing economics that must be covered in the wider context[15].

A novel feature is the use of an extended abstract with access in the *GGG* milieu. This feature follows as a consequence of Bernal's idea of a scientific paper which is short, perhaps two pages. This 'would be supplemented by a longer, more detailed paper... available... to all those thought to be interested in it or who requested it'[16]. In effect, this is the actual paper available as a pay-per-view scheme. Scientists then only need order what they really want to examine in detail. Discussion of Bernal's views and ideas can be found in Coblans[17].

Libraries and e-journals

The foregoing suggests certain areas that need special consideration when viewed from the context of academic libraries:

1. costs – to the library and funding the journal
2. access to the on-line journal in the library
3. viewing the material in the library or individual's desks
4. storage on-site in the library
5. archiving material.

These are inter-related and will be discussed briefly in the light of the development of *GGG*. Although electronic document delivery systems will grow steadily, if not rapidly, in importance, there is still the problem of cost. In the case of *GGG* or other Web-distributed e-journals, who will do the html mark up, image scanning as well as pay for the editing process? Just as lunches have to be paid for by somebody, so even with Internet publishing. At present (and for the near future at least) we, as producers/publishers will do all of the html marking up and copy editing, although one of our first papers has been marked up in html by the author. However, such costs have to be passed to the end-user, whether individual or library. Our proposed flexible subscription and charging system will take production and usage costs into account.

The problems of costs of journals to libraries and individuals have been mentioned above. It may be possible to reduce some costs by producing in electronic format but they will not be free subscriptions. Ideally, over time, we aim to see costs fall for all users. To consolidate some possibilities briefly and using *GGG* as one *possible* model, libraries might care to:

1. let individuals gain access to e-journals from their office or home and shed that cost completely. This equates to a personal subscription as seen currently.
2. subscribe fully, equating to a current subscription for paper products. In electronic form, the material would be down-loaded from the publisher's server. This could allow access on a library computer terminal or distributed to an individual's office. Payment could be negotiated or flat fee charged. The library would then have to store the information and archive it.
3. an individual could request a specific paper (as seen from the WWW pages) and get the library to order and pay for it. The charge could be passed on to the individual or a research grant at a later stage. This is not too far removed from the use of a bibliographic search and then using inter-library loans.

Other combinations are possible but 1 and 2 represent extremes with 3 a 'middle road'. At some later stage, if there are many e-journals from a publisher, it might be possible to negotiate a flat fee of access to the publisher's domain with downloading of individual articles as appropriate. The advantage of completely electronic transmission, with downloading at the users' end, is that it is a natural pay-per-view system. Indeed, it should have the flexibility of allowing libraries to suggest the best working practices (if such can be realized). It is clear from the initial results of our survey that there is still considerable disquiet about the use of electronic media. It is true that there is uncertainty about access, charging and reading from screens and the seeming necessity to print material off locally. These are the penalties for rapid communication and delivery; whether they are sustainable objections in the long-term remains to be seen.

It is reasonable to ask where the definitive text of a paper or journal lies if there is only electronic access. Archiving will be done at the publishers, as well as copyright libraries (but in paper form if necessary). We intend to use CD-ROM for archiving after two years. Purchase or negotiation of an archive CD-ROM by libraries is also a possibility which would speed document delivery. This is likely to be more cost effective than storage on library disc space.

Simple sums can give an idea of feasibility. If an e-journal is 100Mbyte per year then at current storage of about £300 per Gbyte the cost per year is £30. Although this is hardly expensive, it would be on top of subscription costs. If ten e-journals are bought at this amount then, even with the decreasing cost disc storage, the advantages in a locally-held CD-ROM are evident.

It may well be that the library becomes as much an information broker as a lending agent. Consider that the fewer journals taken then the more there will be the need to buy-in via Inter Library Loan, or some other agency for print on paper access, e.g. via an electronic bibliographic search. The advent of e-journals therefore should ease the burden in libraries. In what manner any progression to electronic storage and access for libraries progresses will depend on a balance of factors which it is impossible to predict at present. The only real alternative is to allow evolutionary progress. It follows therefore, that the more adaptable a system can be, whether library, user or supplier, the better. Whether 'better' only refers to least costly, least painful, for one or other side of the community remains to be seen. We would hope however, that some of the advantages outlined here will be realised by use of electronic journals.

Two quotations from J.D. Bernal are worth quoting from fifty years ago: 'The kind of organisation we wish to aim at is one in which all relevant information should be available to each research worker and in amplitude proportional to its degree of relevance. Further, that not only should the information be available but also that it should be to a large extent put at the disposal of the research worker without his having to take any steps to get hold of it.'[13]

'In my opinion, it is not the librarian's function himself to condense and re-allocate the material he deals with; it is his function rather to organize that condensation and re-allocation through the research workers themselves.'[16]

Current debates, as extensions of the ideas of Bernal and those following, must still be placed in a wider context of use and development of electronic media.[18]

Conclusions

Overall, we see pure e-journals as changing the nature of libraries and the role of publishers over the next few years. Librarians are probably aware of these major issues. However, we surmise that academics generally are not aware of the changes which are taking place. All that academics tend to see are increases in journal prices followed by cuts in subscriptions taken by libraries. Libraries will possibly become a more active interface between publishers and readers (staff and students) as well as academic authors. There will need to be more involvement between these contributors to the academic publication process as conditions change. Unfortunately, nobody knows what the environment will be like, even five years hence. The only way that commensal existence can maintain life in all the component parts is by adaptability. The most adaptable component is arguably, the e-journal, the least adaptable, the individual reader.

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Collaborative browsing and visualization of the search process

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Abstract
We describe how to support the process of collaborative browsing and how to integrate support for the social aspects of information searching activities into information systems and particularly their interfaces. The use of library resources is often stereotyped as a solitary activity. However, informal observations indicate significant collaboration between users despite the fact that existing systems fail to support this. We describe the Ariadne system which does attempt to support collaboration by providing a visualization of the search process. Storage of search histories as digital objects allows them to be manipulated and communicated. An explicit representation of a search history supports discussion of search strategies and concepts by explicit pointing to prior activities even when one of the participants may be a novice lacking the appropriate vocabulary. Several different types of activity, synchronous and asynchronous, remote and co-located, can be supported by search process re-use. We outline some of the issues of privacy concerned with the storage of users' searches.

Introduction

The term browsing is frequently applied to information searching activities although it is has been defined in many different ways[1]. In this paper we highlight the social and collaborative aspects of browsing and discuss how they may be assisted by explicit computerized support. Specifically, we describe the Ariadne system – an interface which visualizes the search process as a manipulable digital object. Visualization of the process offers a range of activities that can support more effective searching activities by individuals and through collaboration with others.

The need for collaboration

It is likely that the exponential growth of available online information will continue and that a growing proportion of existing information in traditional libraries will become available electronically. From the general history of computer systems, we should expect that the information access mechanisms will continue to evolve. Therefore it is for these twin reasons of information overload and perpetual systems evolution that we propose the consideration of the techniques of collaboration and visualization particularly as they can be applied to an explicit interaction with a representation of the search process. There are two interrelated areas which collaboration can support: learning and working.

By learning we mean:

- learning both generic information searching and browsing skills
- techniques and activities specific to a particular system
- issues relating to the domain being searched

By working we mean:

- jointly searching with other people
- sharing hints and tips
- asking for advice on particular problems

Existing collaboration

The use of library resources is often stereotyped as a solitary activity, with hardly any mention in the substantial library science and information retrieval literature of the social aspects of information systems. Other than the traditional reference interview which has been extensively studied, there seems to have been very little consideration of issues of collaboration either with paper based or computerized systems.

However, previous library computerization makes all the other people invisible. If anything, computer scientists have been even more determined to ignore the 'problem' of collaboration. We have designed multi-user databases (such as library catalogues) to appear to their users as much as possible as single-user systems.

We are arguing that introducing support for collaboration into information retrieval systems would help users to learn and use the systems more effectively. However it should be noted that people are already using existing systems collaboratively *despite* the systems failing to support this. We have performed informal observations[2] in Lancaster University Library which indicate significant informal computer-based collaboration between users. They share a terminal or lean over to look at an adjacent terminal and discuss and point at screens. Many students learn how to use the system not from attending introductory talks, reading leaflets or using the help facilities on the system, but from their friends. This approach, at least at Lancaster, appears to be very effective with a high degree of contentment with the system, even from users who have little or no experience with computer systems (such as word processors). For our investigations, we had great difficulty in finding people afraid or unwilling to use the OPACs.

Spontaneous collaborative learning is effective in introducing novices to the basics of using an OPAC. However, we found that many users only learned a minimal subset of the available facilities (such as almost exclusively performing author-title searches). This is a sensible learning strategy for novices. Unfortunately many seem to settle into a feeling of competence with little desire to improve by either formal or informal learning. They may acquire sub-optimal working habits such as failure to refine a search, contenting themselves with reading hundreds of hits or never investigating how to use more sophisticated searching options. Such habits can be addressed through collaboration with other learners, working with librarians or computerized help. We believe that systems that actively support collaboration should also support this incremental learning, by providing facilities to illustrate and explain browsing techniques.

Social and collaborative browsing

Information retrieval systems have been largely designed to give the impression of being single user systems – the existence and activities of other users have been hidden from each other. Library catalogues often contain little recognition of users' activities beyond noting that some anonymous other person has borrowed the book you were after.

In a computerized environment the searches of users can be easily recorded and re-used. There are several mechanisms for using this information to improve future searching efficiency[3]:

- collaborative filtering[4-7]
- social filtering/recommending[8-10]
- enhancing indexing mechanisms and browsing structures[11-14]

The common feature of all these approaches is that one user's activity can have an influence on

factor in the success or failure of cooperative systems[20]. When there is a cost to adding information to a database (e.g. links[11], annotations[5,21] or ratings[4,7,19]) then users will tend to expect a clear benefit. Although explicit ratings by users may be expected to be more useful in assessing the value of information, inferred ratings may be more effective as the perceived cost may be zero[3].

The inferred ratings approach is particularly suited to applications with large numbers of users – the volume of interaction allows small incremental additions to produce significant results: this concept has been termed *cyberspace leveraging*[22]. A related concept is that of the *history enriched digital object*[17] – structures that contain information about their own history.

Digital libraries, with a large user base and the facilities to record their history, are able to provide social browsing structures where the activities of previous users have enhanced their catalogues[15]. Although the approaches referred to above aim at long term improvement of information structures, the preservation of searches can also be used to support direct human collaboration about information searching activities.

In computer supported cooperative work (CSCW) a common distinction is made between the temporal and spatial nature of activities. Activities are either co-located or remote and either synchronous or asynchronous[23]. Figure 1 shows library activities on these dimensions: the approaches referred to above are largely contained in the term *social information filtering* in the remote-asynchronous quadrant.

In conventional libraries collaborations are usually co-located and synchronous. In digital libraries, as the following sections show, we believe that most interactions will be remote and asynchronous. Staff at a remote and asynchronous reference desk will not be able assist users without explicit computerized support. To investigate these differences we observed users both in Lancaster University Library and connecting remotely. It is our view that understanding collaboration 'as it is' will be helpful in understanding collaboration 'as it may be' in future digital libraries.

Preliminary study

A preliminary study[24] was made observing remote

[redacted]

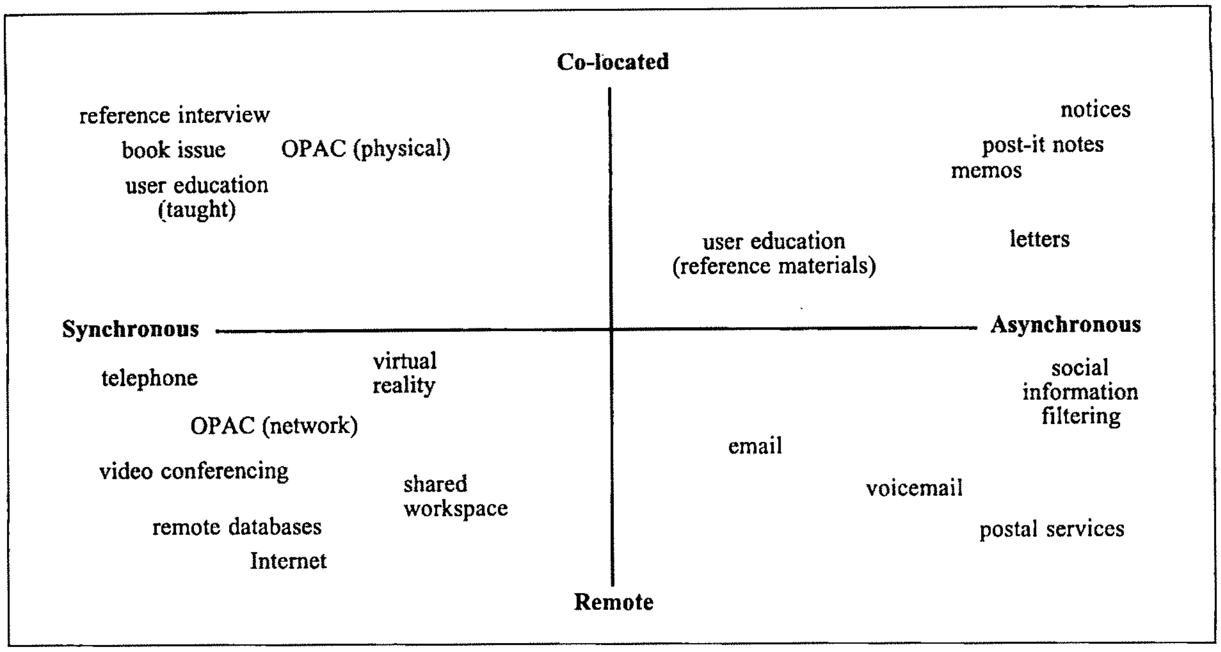


Figure 1. Library activities on spatial and temporal dimensions

searches. A key problem was the misinterpretation of collaborators' written messages to each other. For example, the expert would use a technical information systems term that was misinterpreted by the user. It was clear that what was needed a means of supporting discussions between people who might be using very different vocabularies.

In retrospect our choice of synchronous-remote collaborations was inappropriate. The difficulties of coordinating a time for synchronous working and the heavy workloads of university library staff imply that remote asynchronous collaboration is a more suitable approach. They also imply that we should build systems that help end-users to seek help from each other in addition to (or before) seeking help from an expert.

Product and process

Most examples of visualization in information retrieval concentrate on the document records – both before and after a query has been applied[25]. We can categorize them as addressing the problem of visualizing the search product. Some of the virtual reality approaches allow a form of synchronous collaborative browsing by including embodiments of users in the document space[26,27]. Whilst these areas are important there is another candidate for visualization – the search *process*. A representation of the process of searching can be a valuable aid to recognizing and recovering from errors – both for yourself and for helping others.

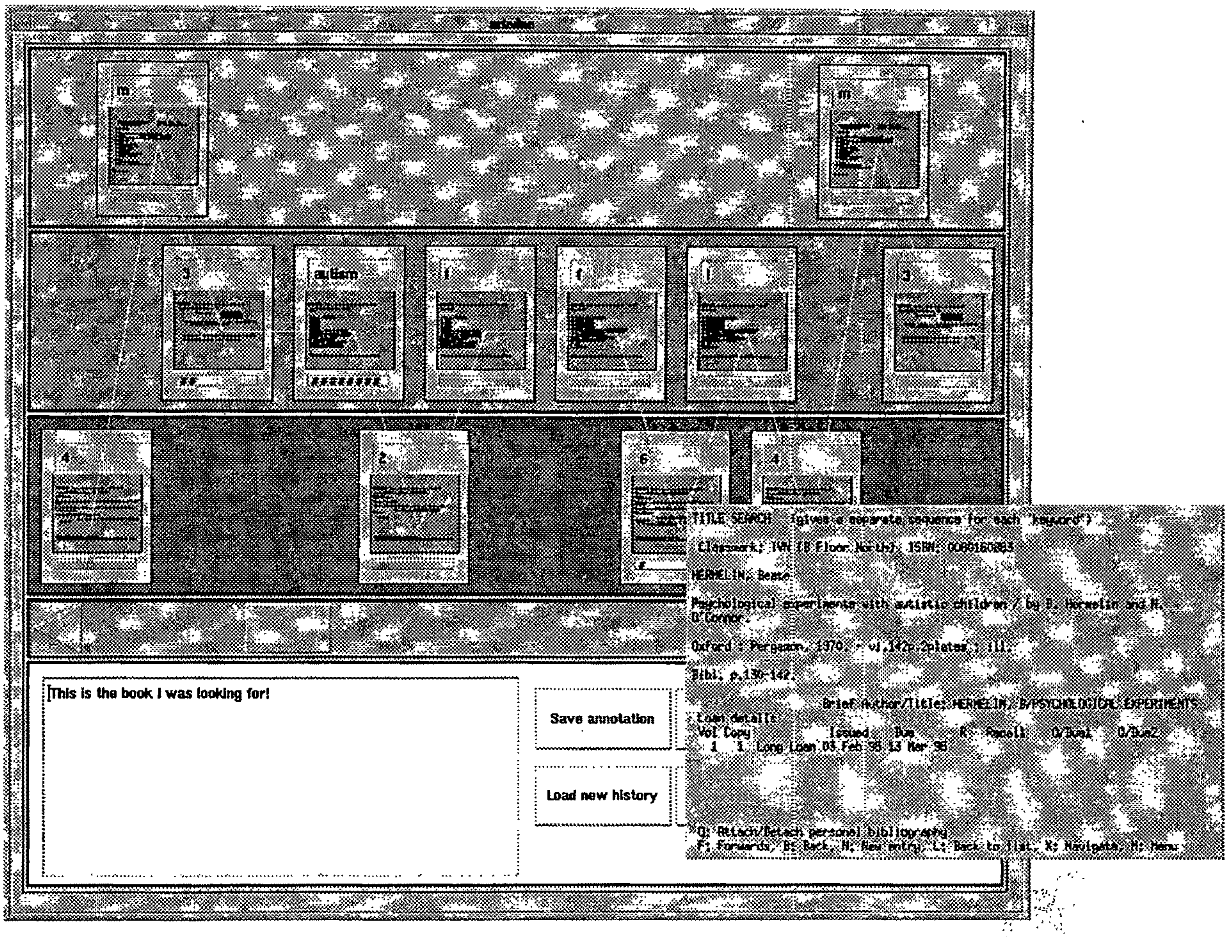
Once a search has been represented as a digital object it can be manipulated: edited, replayed, annotated, re-executed and shared. This representation can become the focus of asynchronous collaborative activities between remote users. A representation of the search process could simply be a textual listing of actions taken by a searcher. However, graphical representations have shown to be useful in abstracting features of problem-solving processes[28]. Lin *et al*[29] use such a visualization technique, as researchers, to examine the behaviour of searchers. We believe that such techniques should be made explicit to the users so they can benefit directly – rather than indirectly via incremental system refinements.

Collaborative working implies a need to share information: both the end *product* (the 'hits') and the *process* (the search strategy/tactics). Similarly there is a need to share this information with the librarians, for whom inspection of the search process can reveal not only gaps in the user's browsing techniques but also an indication of their degree of searching sophistication. In addition an externalized representation of the search process reduces cognitive load and facilitates reflection – a vital component of learning.

Ariadne: visualizing the search process

We have developed an interface, the Ariadne system, that supports collaboration by promoting the awareness of the activities of others, better visualization of the information data structures being browsed and more effective means of communicating the browsing process. The system captures the users' input and the database's output and forms them into a search history consisting of a series of *command-output* pairs. This means data capture is done transparently: so that users can work as if they were interacting directly with their chosen database. It is only in the subsequent playback phase that the new form of working becomes available.

The simplicity of the approach ensures that it can be used for *any* text based interface for *any* library for which remote access via Telnet is possible. This separation between capture and display is necessary because of the lack of separation between the user interface of a database and the database functionality



This is the book I was looking for!

```
TITLE SEARCH  (gives a separate sequence for each 'keyword')
 Classmark: IVN (B Floor North) ISBN: 0080160883
HERMELIN, Beate
Psychological experiments with autistic children / by B. Hermelin and N.
O'Connor.
Oxford : Pergamon, 1970. - vi,142p,2plates : ill.
Bibl. p.130-142.
                    Brief Author/Title: HERMELIN, B/PSYCHOLOGICAL EXPERIMENTS
Loan details
Vol Copy          Issued   Due      R  Recall   O/Due1   O/Due2
 1   1  Long Loan 03 Feb 96 13 Mar 96

Q: Attach/Detach personal bibliography
F: Forwards, B: Back, N: New entry, L: Back to list, X: Navigate, M: Menu
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Figure 2. The Ariadne interface

itself. Therefore, the separation we provide allows the graphical Ariadne interface to work both with data captured in this way and (potentially) through other methods (e.g. by the Z39.50 protocol). Although the current version of the system only produces the visualization after a search has been completed, we intend to extend it to allow the history to be dynamically created and presented in real time.

Ariadne bridges the informal distinction referred to earlier (automatic gathering *v* explicit additions) in that the information is captured at zero perceived cost to the user but is then made available to users who can add value (e.g. an annotation) and communicate it others.

Figure 2 illustrates the system. The visualization of the search process consists of a sequence of the command-output pairs looking like small playing cards and containing thumbnails of the screendump of the outputs. These can be expanded to full size by clicking on them. The sequence of cards through time progresses horizontally while the vertical position of the card on one of three rows gives information of the semantics of the action it represents: choices from top level menus on the top row, search commands in the middle row and looking at particular book details on the bottom row. The aim is to give an impression of 'diving' into a database by composing queries and going down to actual data entries. A session consists of numerous 'dives' into detail, interspersed by 'higher level' activities of composing and combining searches, selecting display options etc. This visualization makes it easy to pick out certain characteristic patterns of behaviour such as reading through large numbers of hits rather than redefining a query. This externalization of the search process into a digital object allows it to be annotated, discussed with colleagues around the screen and distributed to remote collaborators for asynchronous commenting.

Studies with Ariadne

Testing of the system[30] has involved the use of volunteers who bring a problem that they already have to solve, rather than our imposing a standardized problem upon them. We believe that this more authentic form of testing avoids the dangers of implicit assumptions about envisaged use being embodied both in the system design and in the evaluation task. Students from a wide range of academic backgrounds (including Psychology, Computing, Women's Studies, Chemistry, Religious studies and Environmental Science) have used the system. The typical case is that they are about to write an extended essay, dissertation or group project and need to do a literature search. The testing informed the iterative development of the system. The results were promising, not least that complete novices were able to understand the concept of the visualization and found it useful in informing their understanding of the search process, and in discussing this understanding with colleagues. The visualization reduces the potential for misinterpretation and makes it easier to check for remaining misinterpretations and to remediate them through pointing and discussion. In particular novices can discuss searching strategies with experts even when they lack the appropriate information retrieval vocabulary by pointing to examples from the history.

Issues of privacy and ownership

Recording the interaction history of the user of an information system raises a number of issues relating to privacy and ownership[17]. If the interaction history is only recorded by the active choice of the user and if they only use the history themselves, or share it with a small group of known individuals who do not forward it outside the group, then there is little problem. However the potential of recording the histories of users as outlined above may lead to other patterns of usage.

It may be decided to record routinely all search activities of all users. Given the rapidly falling costs of computer memory and storage this is becoming a feasible option. It would offer many advantages including permitting more detailed analysis of usage patterns in order to identify problems users were having with the existing system, which features were popular and which approaches were most productive. In addition, other users could search these histories to support their own searching.

Information professionals may submit a search history (process) along with the results of their searching (product) as part of the justification of their fee. This may be particularly appropriate when part of the information they are providing is the lack of information available on the subject in question and they wish to indicate that their negative results are not from want of trying. By contrast, the same professional may be quite adamant that he or she definitely does not wish to give away the tricks of his or her trade. Likewise, information professionals in a cooperative environment may be willing to share histories within their group but be unwilling to see them spread out any further. We can expect to see levels of access permissions across different groups, perhaps analogous to the levels of permissions to conventional computer files.

Librarians have a long tradition of concern for the privacy of their users. Collaboration usually involves some reduction of this privacy. When the collaboration is with known individuals then the users can freely choose the degree to which they make personal activity information available. However an electronic system offers the opportunity (should people want it) of collaboration with strangers. This may be by the system identifying similar research interests and offering to introduce the participants to each other, leading to a conventional form of collaboration, or it may involve permanent anonymity where the actions of others are used to inform one's own searching behaviour. Where traces are aggregated they become more anonymous even though their utility to future users remains.

The problem arises of who owns a search history and whether the person who created it should have rights over how it is used in the future. Even if a history is anonymised by deleting any link to its author, the pattern of interests revealed in a complete search may well be sufficient to identify uniquely the person. For example, a search history that involved the concepts of visualization, collaboration, browsing and digital libraries may well be sufficient to identify it as performed by the authors of this paper. Breaking up a search session into smaller parts renders identification less easy but may greatly reduce the usefulness of the resulting histories. Note that anonymity of the kind outlined in this paragraph would preclude the potential advantages of the introduction service outlined in the previous paragraph, illustrating the tradeoff between privacy and the potential benefits from collaboration.

It would seem that to be acceptable to users, a system supporting collaboration should make clear to users the benefits that accrue from their loss of privacy along with precise details about the way in which information about their search activities are, and may be, used. Users should also be provided with substantial control over the information about themselves that is stored, including options to veto the storing of certain searches or to anonymize their submissions.

Conclusions

Browsing computerized information resources has a social and collaborative dimension which will be increasingly remote and asynchronous. The storage and re-use of the search process provides a mechanism to support a variety of activities which users may wish to undertake. The visualization of a search process can be a useful means to abstract information and aid collaboration between information workers. In addition, collaborative systems must fulfil not merely the single user attributes of being useful and usable but also the social attribute of being acceptable to the user community, particularly by clearly addressing concerns of privacy and ownership.

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Gender differences in Internet perceptions and use

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Abstract

Seventy-five undergraduate and postgraduate students completed Riding's Cognitive Styles Analysis and a specially devised questionnaire relating to perceptions and use of the Internet. A number of statistically significant correlations were found linking cognitive styles (verbalizer/imager and wholist/analytic), age and department to questionnaire items. However, the clearest findings related to gender differences, with females reporting significantly greater levels of disorientation and disenchantment in relation to the Internet.

Introduction

Teaching and learning in higher education is likely increasingly to involve Internet usage across disciplines (see for example Education and the Internet[1]; Using the Internet for teaching[2]). However, despite its phenomenal growth, as Kellogg and Viehland note[3, p.v], there is still 'the distressing possibility that the Internet is just the latest hype in a long history of overblown expectations about the potential of technology to address educational challenges'.

It undoubtedly has enormous potential, and would seem to be fundamentally different in many ways from previous disappointing educational technologies. It has, as Holyfield and Liber[4,p.30] note, both great potential and present problems: 'The scale of the amount of information now accessible through networks is difficult to comprehend, and it is possible to get very lost when trying to explore it. However, the ability to share information in these ways means that a tool is now available for developing resource based learning to suit the needs and requirements of individual teachers and students'.

The present study focuses on the requirements of individual students. It explores the perception and reported usage of the Internet in relation to individual differences amongst higher education students.

The study

Aims

The original aim of the study reported here was to investigate possible relationships between (a) perceptions and use of the Internet and (b) analytic/wholist and verbalizer/imager cognitive styles. Some statistically significant correlations were indeed found in relation to these factors, and in relation to age and department. However, the most significant findings related to gender differences.

Procedure

Email messages were sent to Sheffield University students asking for volunteers willing to complete a cognitive styles test and a questionnaire relating to Internet perceptions and use. Both tests were administered via remote terminals connected to the campus network, in the students' own time, unsupervised.

Materials

COGNITIVE STYLES

Riding's (1991) Cognitive Styles Analysis (CSA) was used to measure wholist/analytic and verbalizer/imager cognitive styles. The test is described in more detail and illustrated in Appendix A.

INTERNET PERCEPTIONS AND USE

A questionnaire was devised for the present study. Students were asked to indicate levels of agreement or disagreement with 31 items on a 5-point Likert scale. The questionnaire is reproduced in Appendix B.

Results

117 students completed the Internet questionnaire. For 75 of these, data were also available about their cognitive styles (from the CSA) and their department. The main analysis was conducted on this group. As shown in Table 1, the group of 75 consisted of 40 males and 35 females. 42 were from the researchers' home department – Information Studies. Students from other departments were grouped into a second *Other* category, enabling comparison between 2 groups with similar numbers of students. Reasons for this grouping were not entirely arbitrary. Unlike the other departments, Information Studies (a) is entirely postgraduate; and (b) includes a compulsory practical course taken by all taught postgraduate students on using the Internet.

Data were analysed using SPSS PC+ version 3.1. Pearson correlation coefficients were sought for the interval and dichotomous nominal data. As

Table 1. Respondents by department and gender

Department	**Male**	**Female**	**Total**
Information Studies	14	28	42
Other	26	7	33
(Engineering)	*(19)*	*(5)*	*(24)*
(Materials Science)	*(5)*	*(0)*	*(5)*
(History)	*(0)*	*(2)*	*(2)*
(Undisclosed)	*(2)*	*(0)*	*(2)*
Total	40	35	75

Table 3. Corrrelation between gender, age and department

	Department *Negative r = Info.Studies*	**Age**
Gender *Positive r = female*	r=-.4523 N=75 p=.000	r=.3369 N=43 p=.014
Age *Positive r = older*	r=-.5033 N=43 p=.000	

Table 4. Correlations for Information Studies students only

Internet questionnaire item	**Sex N=42** *Positive r = female*	**Age N=13**
6. I often feel overloaded with more information than I can handle ...	r=-.2764 p=.038	
20. If I had to choose...I'd prefer keyword searching to browsing ... on the Internet		r=-.5265 p=.032
21. When I use the Internet, I feel as though I'm not as 'in control' as I would like	*r=.2572* *p=.050*	
26. I rarely find anything useful on the Internet	r=.2843 p=.034	
27. I tend to get lost when using the Internet	r=.4992 p=.000	
29. I really enjoy using the Internet	r=-.3367 p=.015	
30. ...prepared to plough through ... irrelevant material...	r=-.2898 p=.031	
	*N=38**	
32. Time spent on the Internet	r=-.4245 p=.004	

* 4 students did not complete item 32 of the questionnaire.

Table 2. Correlations between questionnaire items and gender, age, cognitive styles and department

Internet questionnaire item	Sex N=75 *Positive r = female*	Age N=43	Wholist/ analytic N=43 *Positive r = wholist*	Verbal/ imager N=43 *Positive r = imager*	Department N=75 *Negative r =Info.Studies*
2. ...I generally manage to find my way around the Internet fairly effectively	r=-.2045 p=.039				r=.2261 p=.026
4. The Internet is too unstructured for my liking	r= .2806 p=.007	r=.3587 p=.009			r=-.5270 p=.000
5. ...browsing ... much more useful to me than keyword searching			r=.3013 p=.025		
6. I often feel overloaded with more information than I can handle...					r=-.2655 p=.011
8. My main reason for using the Internet is for personal interest	r=-.2200 p=.029	r= -.2748 p=.037			r=.4023 p=.000
10. ...Internet an excellent source for information ... of personal interest to me	r=-.2570 p=.013	r=-.3202 p=.018			r=.3874 p=.000
11. It's best to use the Internet only when you have a well defined plan				r=.3962 p=.004	
13. I rarely find anything interesting on the Internet	r= .2430 p=.018				
15. ...often sidetracked into too much irrelevant material when using the Internet	r=-.2091 p=.036		r=.2819 p=.034		
17. I only use the Internet when forced to...	r= .2782 p=.008				
18. I often like to browse around the Internet without any clearlty defined plan	r=-.2916 p=.006			r=-.2635 p=.044	
19. ...the best way to learn to use the Internet is to explore everything broadly...			r=.2705 p=.040		
21. When I use the Internet, I feel as though I'm not as 'in control' as I would like	r= .3052 p=.004				r=-.3238 p=.002
22. I often feel anxious/upset about the amount of information to get through...					r=-.3115 p=.003
23. ...main reason for using Internet is to find work-related information...	r= .2457 p=.017				r=-.3822 p=.000
25. I usually manage to keep 'on target' and avoid too much irrelevant material...				r=.2238 p=.047	
26. I rarely find anything useful on the Internet	r= .2428 p=.018				
27. I tend to get lost when using the Internet	r= .3846 p=.000				
28. I usually only look at things on the Internet ... suggested to me	r= .1924 p=.049				
29. I really enjoy using the Internet	r=-3172 p=.003				
30. ...prepared to plough through ... irrelevant material...	r=-2839 p=.007			r=-.2587 p=.047	
31. ...no reservations about enrolling on a course ... taught entirely via Internet	r=-.2071 p=.037				r=.2967 p=.005
32. Time spent on the Internet	r=-.2041 p=.045 *N=70*				

Hedderson[5,p.92] notes: 'Two-category nominal variables... are a special case of nominal variables because, after being coded with numerical values, they can be used in interval-level statistical analyses such as Pearson correlations...'. A probability value of < .05 was adopted as the minimum acceptable level for this study. Two correlations were found where probability was exactly .05. These were included (italicized) in tables 4 and 5, as interesting and worthy of further investigation.

A number of statistically significant correlations were found between items from the Internet questionnaire and (a) cognitive style (wholist/analytic and verbalizer/ imager); (b) age; (c) gender; and (d) department. Table 2 gives details of these correlations. Some questionnaire items have been abbreviated to fit more easily in the tables. The full version of the questionnaire is reproduced in Appendix B.

The fact that there were significant correlations between (a) gender and department, (b) gender and age, and (c) age and department (table 3) means that there is scope for ambiguity in interpretation. It is possible, for example, that a correlation between a questionnaire item and, say, gender may in fact be entirely attributable to age and/or department rather than gender.

In an attempt to clarify this ambiguity, the data were analysed separately for the 2 categories of department – Information Studies (table 4) and Other (table 5), and for different age groups – above the mean age (table 6) and below the mean age (table 7). This issue is discussed in detail in the next section.

A factor analysis was conducted on the questionnaire responses in an attempt to identify broad approaches to Internet perception and use. The results are shown in table 8. Only items with a loading of over .30 are included. All 117 questionnaire responses were used (not just those of the 75 students for whom cognitive styles and department data were also available).

Correlations were sought between these 7 factors and gender, age, department and cognitive style. Results are given in table 9. No significant correlations were found between factors and department. The sample size in the case of age and cognitive style is 57, as opposed to 43 in the previous analysis. This is due to the fact that the present analysis used responses from all of the original 117 students for whom cognitive style and age data were available. It was not limited to those students for whom departmental data were also available.

Summary

Within this sample of 75 undergraduate and postgraduate university students, clear differences emerged in relation to (a) perceptions and reported use of the Internet and (b) gender, age, cognitive style and department. A number of correlations were found between gender and questionnaire items. These are shown in table 10. All items except 21 and 23 correlated with gender and *not* with any other variable which itself correlated with gender. Items 21 and 23 correlated not only with gender, but also with department (which itself correlated with gender). However, they also correlated with gender when the sample was broken down by department. Item 21 correlated with gender within the Information Studies group. However, correlation was at the limit of acceptability (p=.050). Item 23 correlated with gender within the Other Departments group. If these correlations were due entirely to department (and not to gender), then the latter correlations would not have occurred. It was therefore considered reasonable to include them in table 10.

A number of gender differences were also found only in relation to students from Information Studies (table 11), and in only in relation to students below the mean age of the sample (table 12). A number of gender differences were found in both the 'below the mean age' group *and* the 'Other Departments' group (table 13).

Gender differences shown in tables 14 and 15 are somewhat ambiguous in that correlations were found between (a) questionnaire items and (b) gender, age and/or department. As previously noted, age and department themselves correlated with gender. When the sample was broken down by age and department, these gender differences were not found. It is therefore not possible to know the extent to which the questionnaire items correlate with any one of the variables.

The factor analysis revealed 7 broad approaches to Internet perception and use. The main features of each, along with the individual differences (gender, age or cognitive style) which correlated significantly with them, are summarized below.

Factor I. Disoriented
Associated with female students.
Characteristics: Unable to find their way around the Internet effectively, often getting lost; not 'in control'; Internet too unstructured and too big; searching the Internet too difficult and uncertain; using the Internet not enjoyable; only use it when they have to.

Factor II. Disinterested
Characteristics: Internet perceived as offering little of personal interest, usefulness for work, or pleasure; too big; use it only when they have to; would not enrol on a course taught via the Internet.

Factor III. Informationally overloaded – planful
Associated with 'verbalizers'
Characteristics: Suffering from information overload and anxiety; trying to cope through taking guidance on what to look at, and avoiding unplanned browsing; only use it when they have to.

Factor IV. Informationally overloaded – graphics-oriented
Associated with older students
Characteristics: Suffering from information overload and anxiety; helped by WWW's graphical approach.

Table 5. Correlations for departments excluding Information Studies

Internet questionnaire item	**Sex N=33** ***Positive r = male***	**Age N=30** ***Positive r = older***
5. ...browsing ... much more useful to me than keyword searching	*r=-.2915* *p=.050*	
11. It's best to use the Internet only when you have a well defined plan	r=.3920 p=.012	r=-.3540 p=.027
13. I rarely find anything interesting on the Internet	r=.3515 p=.022	
15. ...often sidetracked into too much irrelevant material when using the Internet	r=-.3168 p=.036	
17. I only use the Internet when forced to ...	r=.3359 p=.028	
23. ...main reason for using Internet is to find work-related information...	r=.3234 p=.033	
28. I usually only look at things on the Internet ... suggested to me	r=.3352 p=.028	

Table 6. Correlations for students grouped above the mean age

Internet questionnaire item	**Gender N=22**
23. ...main reason for using Internet is to find work-related information...	r=.3810 p=.040

Table 7. Correlations for students grouped below the mean age

Internet questionnaire item	**Gender N=21**
5. ...browsing ... much more useful to me than keyword searching	r=-.4302 p=.026
7. The Internet is too big for my liking	r=.3811 p=.044
11. It's best to use the Internet only when you have a well defined plan	r=.3880 p=.041
12. ...the graphical elements of the WWW... make me much more likely to use the Internet...	r=-.3922 p=.039
13. I rarely find anything interesting on the Internet	r=.4157 p=.030
17. Only use the Internet when forced to (eg. taking a course *about* the Internet)	r=.5434 p=.005
18. I often like to browse around the Internet without any clearly defined plan	r=-.5824 p=.003
19. ...the best way to learn to use the Internet is to explore everything broadly...	r=-.5135 p=.009
23. ...main reason for using Internet is to find work-related information...	r=.4029 p=.035
28. I usually only look at things on the Internet ... suggested to me	r=.5694 p=.004
30. ...prepared to plough through ... irrelevant material...	r=-.4744 p=.015

Factor V. Work-oriented
Associated with older students and/or female students.
Characteristics: Internet used for work and not personal interest.

Factor VI. Keyword searchers
Characteristics: Keyword searching preferred to browsing; considered best to have a clear plan when searching, as opposed to relatively unplanned browsing.

Factor VII. Seemingly happy to spend time on the Internet
Associated with male students.
Characteristics: Willing to plough through the irrelevant in the search for the relevant; happy to take a course entirely via the Internet; really enjoy using the Internet.

Discussion

The men in this sample seem to enjoy browsing around the Internet, often with no clear plan, happy to plough through the irrelevant in the search for personally interesting (as opposed to work-related) material. The women, by comparison, seem relatively disoriented by and disenchanted with the Internet, generally feeling themselves unable to find their way around effectively. They tend to use it for work purposes as opposed to personal interest, to use it only when they have to, and to look at items only when they have been suggested to them (as opposed to browsing around).

Why should such differences exist? It is possible that the female disorientation and disenchantment observed here may simply represent a realistic appraisal of the current state of the Internet as a useful and valuable work tool for these particular students. Perhaps the Internet *is* at present too big and unstructured for many serious work-oriented students to find genuinely useful material. The male satisfaction observed here may be a measure of a 'cyber-bum' culture, geared to uncritically surfing around for fun rather than systematically searching for work-relevant information. As Pickering[6,p.11] warns: 'The Internet is not a panacea. It is certainly not going to magically release floods of creative discovery learning. Nor is it an attractive image of education to think of the pale computer nerd hunched over his (it usually is *his*) keyboard/screen, obsessively netsurfing rather than interacting with real people face to face.'

Possibly the current male bias of the Internet may somehow affect the perceptions of female users. A recent survey of Internet users[7] obtained data from 1463 organizations representing what the authors claimed to be some 11% of 13.5 million Internet users at end of 1994. The survey concluded that 64% of Internet users were male, 36% female, and that proportionally more women use the Internet from educational institutions than from elsewhere. Reasons may also lie in the traditional male bias towards technology in general, and computing in particular. It may be that effective use of computer networks still requires a technological bent. At the University of Phoenix OnLine campus, some 18000 students learn almost exclusively by email seminars and tutorials, and poses the question: 'The gender bias of Phoenix's intake also raises the question: are women less attracted to computer based learning?' The recently published statistical survey of students in UK higher education in 1994 conducted by the Higher Education Statistics Agency (*Times Higher Education Supplement*, 1995) has drawn attention to gender-stereotypical imbalances in UK higher education course selection. Despite an overall balance between male and female full time undergraduate students, there is a skew towards males in technologically oriented courses, women accounting for less than 25% of undergraduates in computer science, engineering and technology.

If such factors are at play, one would expect their influence increasingly to decline. Information technology is increasingly permeating activity in every subject discipline, including those currently attracting a more equal or greater proportion of females such as medicine-related subjects, management, librarianship and information science. Women may increasingly even up the gender imbalance relating to possession of a technological orientation. Arguably also, increasingly the use of information technology – particularly accessing and using the Internet – no longer does require any technological bent. Graphically-oriented World Wide Web browsers arguably enable even the most technophobic of individuals to access and at least to some extent find their way around the Internet.

Further empirical research will clearly be required to shed light on such important issues in what Kellogg and Viehland[3,p.v] have described as currently 'a nascent research area, one with little formal empirical research, but with a growing reservoir of reports based largely on qualitative data and impressions'.

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Table 8. Factor analysis of questionnaire responses

Internet questionnaire item	I	II	III	IV	V	VI	VII
1. I don't find using the Internet a particularly enjoyable experience		.58121					
2. ...I generally manage to find my way around the Internet fairly effectively	-.76904						
3. I consider the Internet an extremely useful source of information for my work		-.67163			.38267		
4. The Internet is too unstructured for my liking	.62365						
5. ...browsing ... much more useful to me than keyword searching						-.80577	
6. I often feel overloaded with more information than I can handle ...			.49842	.46390			
7. The Internet is too big for my liking	.43271	.36205					
8. My main reason for using Internet is for personal interest					-.82996		
9. Searching for information on the Internet is too uncertain a business for my liking	.58867						
10. ...Internet an excellent source for information ... of personal interest to me		-.73006					
11. It's best to use the Internet only when you have a well defined plan			.60992			.37357	
12. ..the graphical elements of the WWW make me much more likely to use the Internet...				.75501			
13. I rarely find anything interesting on the Internet		.73627					
16. Searching for information is too difficult on the Internet	.70920						
17. I only use the Internet when forced to ...	.35755	.44928	.32521				
18. I often like to browse around the Internet without any clearly defined plan			-.56878				
20. If I had to choose only one, I'd prefer keyword searching to browsing						.75267	
21. When I use the Internet, I feel as though I'm not as 'in control' as I would like	.74849						
22. I often feel anxious/upset about the amount of information to get through...			.42743	.43402			
23. ...main reason for using Internet is to find work-related information...					.82292		
24. WWW ... attractive graphics ... unlikely to ... affect my level of usage of the Internet				-.77276			
26. I rarely find anything useful on the Internet		.74636					
27. I tend to get lost when using the Internet	.79063						
28. I usually only look at things on the Internet ... suggested to me			.68995				
29. I really enjoy using the Internet	-.39093	-.55445	-.34651				.30661
30. ...prepared to plough through ... irrelevant material...							.77689
31. ...no reservations about enrolling on a course ... taught entirely via Internet		-.30234					.53503

Table 9. Correlation between factors and gender, age and verbalizer/imager cognitive style

	Factor I	**Factor III**	**Factor IV**	**Factor V**	**Factor VII**
Gender N=75 **Positive r = female**	r=.2643 p=.011			r=.2579 p=.013	r=-.2042 p=.039
Age N=57			r=.2264 p=.045	r=.3764 p=.002	
Verbal/imager N=57 **Positive r = imager**		r=.2983 p=.012			

Table 10. Gender differences across all departments and ages

13. I rarely find anything interesting on the Internet	Female
15. ...often sidetracked into too much irrelevant material when using the Internet	Male
17. I only use the Internet when forced to ...	Female
18. I often like to browse around the Internet without any clearly defined plan	Male
21. When I use the Internet, I feel as though I'm not as 'in control' as I would like	Female
23. ...main reason for using Internet is to find work-related information...	Female
26.I rarely find anything useful on the Internet	Female
27. I tend to get lost when using the Internet	Female
28. I usually only look at things on the Internet ... suggested to me	Female
29. I really enjoy using the Internet	Male
30. ...prepared to plough through ... irrelevant material...	Male
32. Time spent on the Internet.	Male

Table 11. Gender differences within Information Studies only

6. I often feel overloaded with more information than I can handle ...	Male

Table 12. Gender differences within low age group only

7. The Internet is too big for my liking	Female
12. ...the graphical elements of the WWW ... make me much more likely to use the Internet ...	Male
19. ...the best way to learn to use the Internet is to explore everything broadly...	Male

Table 13. Gender differences occurring in both 'Other Departments' and 'Low Age' groups

5. ...browsing ... much more useful to me than keyword searching	Male
11. It's best to use the Internet only when you have a well defined plan	Female

Table 14. Gender differences which may be attributable partly or wholly to Departmental differences.

2. ...I generally manage to find my way around the Internet fairly effectively	Male/Other departments

Table 15. Gender differences which may be attributable partly or wholly to Age and/or Departmental differences

4. The Internet is too unstructured for my liking	Female/Older/ Info.Studies
8. My main reason for using Internet is for personal interest	Male/Younger/ Other depts.
10. ...Internet an excellent source for information ... of personal interest to me	Male/Younger/ Other depts.

APPENDIX A

The Cognitive Styles Analysis

This instrument was designed by Riding (1991) to measure two dimensions of cognitive style: verbalizer/imager and wholist/analytic.

VERBALIZER/IMAGER

The verbalizer/imager measure presents the user with a series of statements about the relationship between two words, and asks him/her to decide whether each statement is true or false. One statement is shown, and the user asked to decide upon it, per screen. Half the statements concern conceptual relationships (asking if A is a TYPE of B): the other half concern visual relationships (asking if A is the same colour as B). Two example statements are shown below:

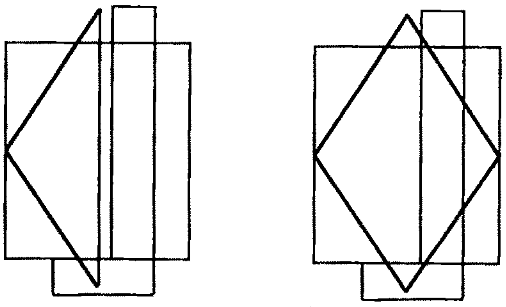
"OAK and BEECH are the same TYPE"

"BREAD and BUTTER are the same COLOUR"

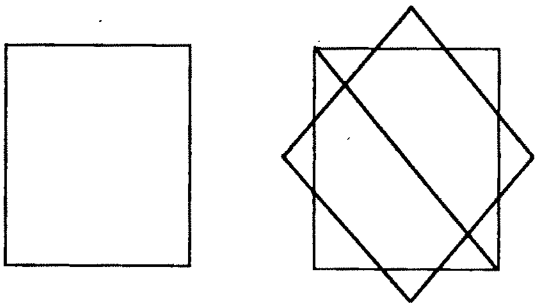
The authors assume that shorter correct response times will be displayed by verbalizers in the case of the conceptual similarities, since these are essentially verbal and cannot be represented visually). Imagers are likely to give accurate responses more quickly to the statements concerning visual relationships (since retrieval from mental images would be quicker).

ANALYTIC/WHOLIST

This section of the test entails 2 sub-tests. In the first, each screen displays two geometric shapes. The user is asked to determine if the shape on the left is the same as the shape on the right – for example:



In the second sub-test, each screen again displays two shapes, but asks the user to decide whether the simple shape on the left is contained within the more complex shape on the right – for example:



Speed on the first sub-test is considered to indicate relatively high ability in global, wholist information processing (since this ability is likely to result in global similarities being perceived more quickly). Speed on the second sub-test is considered to indicate high analytic ability, since the simple shape presented at the left must be disembedded from within the complex shape on the right before a decision can be made.

APPENDIX B

Internet Questionnaire

Students responded to items 1–31 on a 5-point Likert scale:

1. *Definitely agree*
2. *Agree with reservations*
3. *Don't know*
4. *Disagree with reservations*
5. *Definitely disagree*

1. I don't find using the Internet a particularly enjoyable experience

2. Despite its complexity, I generally manage to find my way around the Internet fairly effectively

3. I consider the Internet an extremely useful source of information for my work

4. The Internet is too unstructured for my liking

5. When searching for information on the Internet, I consider browsing to be much more useful to me than keyword searching

6. I often feel overloaded with more information than I can handle (generally – not just in relation to Internet)

7. The Internet is too big for my liking

8. My main reason for using Internet is for personal interest

9. Searching for information on the Internet is too uncertain a business for my liking

10. I consider the Internet an excellent source of information which is of personal interest to me

11. It's best to use the Internet only when you have a well defined plan (rather than just browsing around)

12. I personally think that the graphical elements of the World Wide Web (i.e. pictures, icons, graphics, etc. as opposed to just text) make me much more likely to use the Internet than if it were just text-based.

13. I rarely find anything interesting on the Internet

14. My advice to someone like myself would be: learn to use the Internet by mastering one aspect (or tool) fairly thoroughly before going on to explore others

15. I often find myself getting sidetracked into too much irrelevant material when using the Internet.

16. Searching for information is too difficult on the Internet

17. I only use the Internet when forced to (e.g. when taking a course about the Internet itself!)

18. I often like to browse around the Internet without any clearly defined plan

19. My advice to someone like myself would be: the best way to learn to use the Internet is to explore everything broadly to get a comparative 'feel' of the various aspects/tools before getting down to mastering any one in depth.

20. If I had to choose only one, I'd prefer keyword searching to browsing (hypertext) on the Internet

21. When I use the Internet, I feel as though I'm not as 'in control' as I would like

22. I often feel anxious or upset about the amount of information I've got to get through (generally - not just in relation to Internet)

23. My main reason for using Internet is to find work-related information (excluding work for a course about the Internet itself!)

24. The fact that the World Wide Web has attractive graphics is unlikely to actually affect my level of usage of the Internet

25. I usually manage to keep 'on target' and avoid too much irrelevant material when using the Internet

26. I rarely find anything useful on the Internet

27. I tend to get lost when using the Internet

28. I usually only look at things on the Internet that have been suggested to me

29. I really enjoy using the Internet

30. I'm prepared to plough through quite a lot of irrelevant information in case there's something useful I might otherwise miss on the Internet

31. I would have no reservations about enrolling on a course (i.e. a course on some subject other than the Internet itself) if it were taught entirely via Internet

32. Would you please estimate as closely as possible how many minutes per week on average you use the Internet.

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Paul Robert Green

ENABLING A GLOBAL COMMUNITY OF KNOWLEDGE
Marcus Speh

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Aslib Proceedings, vol.48, no.9, September 1996. pp.193-220

Editorial

With a little diffidence I suggested to Aslib that an Editorial might be a Good Thing, at least for my first issue. The response was that AP should have such a thing regularly. This transformed the notion into a Good Idea. Future issues will carry some guest editorials, so that readers should not have to cope with too much more of what follows now.

Years ago at college Leslie Patrick, Aber's lecturer on special libraries, taught us about Aslib and its journals. The hallowed trio were *Aslib Information* (now *Managing Information*), *Journal of Documentation*, and *Aslib Proceedings* (this was before automation took a grip, and thus before *Program*). We were taught that *Aslib Information* was the newsletter of the organization; while *J.Doc* printed everything with sums in. *Proceedings* carried all those papers that arose from the activities of Aslib, its branches and other groups (I don't think 'SIGs' had been coined then). This implied that it's subject matter was eclectic; and that the contents was largely un-refereed.

The road from learning about Aslib, to working there, and then later being invited to edit *Proceedings* has been a long one and, like most careers, largely unplanned and haphazard. I suppose that somewhere there ought to be one of those highly significant archive pictures of the Editor at an early age, standing before the front door of Aslib clutching his rattle and rusk in one hand, and a copy of this journal in the other.

Much good material is generated by Aslib's events; and the quality and quantity show no signs of diminishing. The fortunate Editor therefore has the task of picking the most appropriate from what is best. In addition to this input, *Proceedings* will continue to carry submitted and commissioned papers. I would wish to introduce a further source of papers: coursework arising from LIS studies. The UK's library and information science courses now cover a very wide range of detailed subject matter, and are linked to just about every other discipline that can be imagined. Lecturers and teachers on LIS courses are invited to suggest to their students submission of coursework to *Proceedings*. Publication cannot, of course, be guaranteed. However here is a sympathetic Editor who can provide the resources to tidy up material; and a journal that can offer first publication.

Another possible source of material which will be explored is that of short communications. These can be things such as write-ups by a reporter of a talk given to a group; or a summary of a seminar or workshop. It is hoped to be able to include worthwhile papers of this sort in the near future.

An editorial at the start of the journal should be balanced by letters and comments at the end. Any comments that continue or develop discussion arising from the contents of *Proceedings* will be very welcome.

Peter Gillman
Editor

Adhesive journal binding – the Remploy trial at Leeds University Library

Paul Robert Green
Brotherton Library, Leeds University, Leeds LS2 9JT, UK.

Abstract

This paper examines the development of adhesive journal binding in the UK and reports on an extensive trial of Remploy's adhesive binding in the Edward Boyle Library for Science and Engineering journals.

Introduction

Cold-cure adhesive binding has been widely used in the USA for at least 15 years and enormous developments have taken place during that time, both in the appearance of the binding and in its durability. These developments, along with increasing automation and the need for less skilled and thus less costly staff have brought the cost of binding down enormously. Adhesive binding has thus become the standard method of leaf attachment for most of the binding done in the USA. During the spring and early summer of 1989, I was based at Cornell University as a Fulbright Scholar. Whilst there, I had the opportunity of visiting several large binderies along the East Coast of the USA, and I was most impressed by what I saw. The degree of automation and speed of operation left most UK binders standing, and the cost differential was enormous. The cost of journal binding at that time was approximately three to four times higher in the UK than in the USA, across a wide range of binders. The problem in the UK lay in the fact that binding at that time was still regarded very much as a craft industry, with highly trained craftsmen turning out superb quality work, but at a price that UK institutions were becoming increasingly unable to afford. British binders had also argued that librarians would not accept a change to adhesive binding, because of the problems encountered with publishers' hot melt bindings; these were prone to rapid failure and had given adhesive binding, by whatever method, a bad reputation. Even here, though, there have been enormous developments. An excellent review of this subject is given by Tony Clark[1] in his book entitled *Bookbinding with adhesives* (2nd edition).

However, I remained convinced that with the right capital investment and quality control, British binders could successfully introduce a commercial cold-cure adhesive binding at considerable cost savings for British libraries. Before my return to the UK, I therefore undertook a study of binding styles and practices at Cornell University and compared these with practices at Leeds on my return[2,3].

The situation back in the UK was that I had previously approached several binders and asked them to consider producing prototype adhesive bindings at a reduced cost. Lancaster University Library had already been paving the way with its own adhesive binding for journals, so I saw no reason why commercial binderies should not be able to produce a viable binding. Two commercial binderies had at that stage produced prototypes for us, one large bindery, part of a large group, and another, a small local bindery. These prototypes were based on John Dean's revolutionary design[4], cut-flush, with the spine attached to the text block and curving inwards when opened. For various technical reasons associated with difficulties in blocking, both of the binders were unable to match this design exactly; the cut-flush feature was retained, but a flat stiff spine was introduced to enable clear blocking of the spine to be done by hand. Both binders used the Ehlerman double fan adhesive method, with a specialist PVA glue (Eukalin or Planetol) designed for the purpose and fulfilling the requirements of the standard published by the Library Binding Institute[5]. In both cases, only the spine area was covered with a buckram strip, the remainder of the boards either being left uncovered or covered with a grey craft paper. It soon became clear, though, that the boards were not well enough protected to withstand heavy usage; the corners soon became dog-eared and the edge of the text block was being damaged. Despite the increased cost, we therefore opted for covering the whole surface area of the boards with buckram and protecting the corners with self-adhesive coloured corners[6] to match. For this purpose, we insisted that the buckram used had excellent wear characteristics, in accordance with my test method published in *Aslib Proceedings*[7]. The results of both trials were very encouraging and showed conclusively that this method of leaf attachment is perfectly sound, provided that it is carried out correctly.

A few problems were encountered initially with the glue not penetrating sufficiently into the binding, but this was found to be due to the glue in the machine drying out and becoming too viscous, particularly in hot weather. Greater attention to the glue-pot and the consistency of the glue, thinning it slightly or topping up more frequently, soon overcame this problem. A few early volumes had also failed due to slippage; this was due to the volumes being disturbed before the glue had dried and cured, or due to a failure to clamp volumes firmly enough during the gluing or drying process.

In the end, the large commercial binders did not pursue their trial commercially, because the director responsible for the trial was sent overseas to supervise another project and no-one else took it up. The small local binders kept their binding going for us for two years, but eventually withdrew it; they could not take the risk of a large capital investment on a binding which was aesthetically inferior to their stitched bindings and which they did not believe would gain acceptance with British librarians. As a result of these comments, I decided to undertake a small market research exercise and asked several British librarians if they would be prepared to accept the basic designs of our two trial bindings. Most librarians said that although the cost savings were impressive, they were very unlikely to be able to get these bindings accepted by their chief librarians or members of academic staff. This is still the view, despite the fact that other basic adhesive bindings have been introduced[8]. What was needed for the UK market was an adhesive binding, identical in appearance at first glance to existing stitched bindings on the shelf, but produced at a significantly reduced cost. We were thus looking to produce a binding very similar to the vast majority of cold-cure adhesive bindings being produced commercially in the USA.

It was at this stage that I decided to approach Remploy, one of the largest group binders in the UK, to discuss the possibility of producing a fully commercial cold-cure adhesive binding and to undertake a very extensive trial at Leeds over a period of four years. We had to be sufficiently confident to undertake such a trial, since we were committing approximately 20% of our journal binding to it in the Science and Engineering Library. We therefore obtained an assurance that any binding which failed during the period of the trial, or up to two years after it, would be re-done, at no cost to ourselves. Before launching into production, Remploy undertook a fact-finding exercise. They sent some of their senior staff to the USA and to Germany to assess the market and the equipment available for automating the process. Mekatronics in the USA and Loss in Germany were producing state of the art equipment and Remploy decided to purchase both systems for different sites in the UK.

Method

Most of our binding in the trial was done at the Halifax site, using the American Mekabind/ Mekatwin equipment produced in the USA, with a small amount being done at the Stockton-on-Tees site, using the Loss equipment. Approximately 20% of the journal binding for the Science and Engineering Library was designated for the trial, including some heavily used titles such as *Nature* and *Science*. A number of titles which had heavily filled shiny papers were also included in the trial, to test out the binding on the most difficult materials.

In order to keep costs down as far as possible, we issued instructions to Remploy to bind as received, removing only the covers from individual journal issues and not to remove advertisements etc. We also sent pattern volumes to Remploy, so that they could produce bindings which in appearance matched as closely as possible those bindings already on the shelves, both in terms of the colour of the binding and also in terms of the position of the lettering on the spine. In this way we hoped to undertake the trial with our readers not being able to see that we had done anything different. In terms of performance, we were hoping for a binding at least as durable as an equivalent stitched binding, but opening much more easily. This was an important factor, since many of our science and engineering journals are heavily photocopied.

Bindings were produced by milling off the spines of journal issues to be bound and then cutting grooves across the spine of the whole block to be bound, ensuring that the block was firmly clamped during this process. Cutting grooves at approximately 1/16" deep was found to assist penetration of the glue into the binding and greatly increased its strength, particularly for heavily filled papers. This technique was an integral part of both the German and American systems. Endpapers were then attached prior to gluing. The text block was then double fan-glued using the appropriate PVA adhesive for the purpose (Planetol or Eukalin). At this stage, a flexible and only slightly absorbent mull was coated with the same adhesive and then applied to the spine with the adhesive applied, ensuring all the time that the block was firmly clamped near the spine and unable to slip. A traditional cotton or linen mull was found to be unsuitable for this type of binding, since it was too absorbent, allowing the adhesive to dry too quickly and drawing it out of the spine, rather than allowing it to dry slowly, seeping down into the spine to give maximum adherence. Glued text blocks were then allowed to dry upwards, allowing the adhesive to seep down a little into the bindings as they dried and cured. The spines were then rounded and backed when the adhesive was dry, but before it had fully cured. This was found to help maintain the shape of the binding, since fully cured adhesive tended to revert to its original *shape* and undermine the rounding.

Meanwhile, the cases had already been prepared, based on our instructions from the pattern volumes supplied. Details were kept on a computer system and records sent by disk to the Newcastle-under-Lyme site for blocking the buckram; this was then returned to Halifax for making up the cases. Bound text blocks were then attached to the appropriately lettered cases, checked and the volumes returned to the Science and Engineering Library for accessioning and shelving. We operated the trial on a single price structure – the same price being applied to all the volumes we sent. We felt that this was a better system for us since it made checking invoices very straightforward. We also obtained a 10% discount for participating in the trial.

Results

As expected, we did experience some teething problems with the first few batches of binding, as operators were being trained and the techniques were being learned. We therefore did not start the trial properly until I was satisfied that production methods were being carried out correctly and work of a consistent standard was being returned to us. For the purposes of the trial, we therefore discounted the first two months of returned volumes. However, the trial does contain information on all the volumes bound in the subsequent four years. Obviously, some of the volumes were on the shelves longer than others, so we are looking at the average shelving time between 0 and four years, i.e. two years. However, it was interesting to note, as the results were being collected, that the small numbers of failures were not predominantly in those volumes which had been shelved for the longest period.

At the end of the four year period, I inspected every volume bound and assessed its condition, both in terms of appearance and, most importantly, in terms of the durability of the binding. Where a journal title had glossy/heavily filled paper or was heavily used (an average of one or more borrowings per volume), this was noted. Each volume was rated according to the key below. The results are summarized in Table 1. (The full set of results for each title in the survey, by subject, is available on application to the author)

Conclusion

As can be seen from Table 1, the results are very encouraging. Very few volumes have an appearance which is very poor – only two out of the total of 2,334 volumes surveyed (.08%) came into this category. The vast majority, 2,281 (97.7%) had an excellent appearance. Only 53 volumes (2.3%) had an appearance which was not excellent.

In terms of performance, the vast majority of volumes (2,283 or 97.8%) had perfectly sound bindings and had thus performed well. Only eight volumes had failed completely (0.3%), 20 had worn bindings (0.85%) and 23 had loose bindings (0.98%), making a total of 51 volumes (2.2%) which had any problems at all.

As expected, the volumes produced all appeared to open much better than their stitched equivalents, causing less strain during photocopying.

The stage is thus set for Remploy to launch a commercial cold-cure adhesive journal binding,

Table 1. Summaries of performance of journal bindings.*

KEY:

AE	Appearance excellent.
AG	Appearance good.
AF	Appearance fair.
AP	Appearance poor.
BS	Binding sound – No sign of leaf detachment or loose pages.
BL	Binding loose – Binding slightly loose in its case and/or a few loose pages, but all pages still attached.
BW	Binding worn – 1 page detached and/or several pages loose, but still attached.
BF	Binding failed – More than 1 page detached.

* A complete list of titles from which this table was compiled is available from the author.

TOTALS	AE	AG	AF	AP	BS	BL	BW	BF
280	270	2	8	0	267	12	1	0
416	382	25	7	2	408	7	1	0
438	438	0	0	0	431	7	1	0
364	357	1	6	0	344	0	12	8
333	331	2	0	0	333	0	0	0
455	0	0	0	0	453	2	0	0
48	48	0	0	0	47	0	1	0
2334	2281	30	21	2	2283	23	20	8

which has every prospect of success, provided strict quality control measures are put into place at all of the sites offering it. Remploy also need to give customers a guarantee on the performance of the binding and to replace any volumes which do not perform up to standard, for a period of at least four years after binding. It has been encouraging to note that the Barking site has recently purchased the Ultrabind system from Mekatronics. This really is state-of-the art equipment in terms of automation and quality. The Ultrabind takes loose journal issues in at one end and produces fully bound text blocks at the other, moving in stages through the machine. Working at capacity, it can turn out a binding every 20 seconds. This machine in particular, and its predecessors[9], were designed by Jack Bendror, President of Mekatronics Inc., whose efforts have made a significant contribution to the development of adhesive binding.

Acknowledgements
I would like to thank Remploy for their co-operation in this trial, and in particular for the assistance given by Peter Green of Remploy for his rigorous testing of the prototypes. I would also like to thank Jack Bendror for his assistance in supplying background information on the development of adhesive bindings.

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Enabling a global community of knowledge

Marcus Speh
Andersen Consulting, London

Keynote speech given at the Aslib Conference Profitable Marketing on the Internet, held at the Cafe Royal, London on 3-4 April 1996.

Abstract

A short personal view on the development of the Internet phenomenon is given. It is argued that the Internet is a powerful paradigm of change and community building. Changes which enable the learning organization are of particular interest. This is investigated in the context of corporate training using, or learning from, the Internet. Next, capabilities and rigidities of the net as a knowledge management tool rather than yet another way to distribute unwanted information, are listed. Finally, the important lessons learnt from the success of the Internet are linked to the future of marketing the Internet world wide.

Introduction

Today, I feel in the position of someone who was fortunate enough to have witnessed the very first television broadcasts in 1925, and who, only six years afterwards, was asked to give his views on the new medium. Indeed, it seems such early days for the Internet, in spite of its phenomenal growth over the last decade, that a personal, you may call it nostalgic, view on its history might be in place. From there, I will happily spin my thoughts circling around the main conference topic, Profitable Marketing on the Internet. But first we need to find out whether there is anything worth marketing at all.

From particles to people to profit

It is the year 1990. The WWW has barely seen the light. I am trying to use the first purely textual browser to get a piece of information on a programming language which hardly anyone uses in my field of academic research, theoretical particle physics. 1992: two years later, I am offering a couple of Virtual Libraries – consisting of HTML pages densely filled with pointers to strange locations all around the globe. In an email exchange which goes on for several weeks, Tim Berners-Lee, the Father of the Web, teaches me how to write proper HTML. The topical quality of this index information is guaranteed by my knowledge of the subject matter. To keep the over one thousand hyperlinks up to date, I have to spend up to eight hours daily on the net, much of it in online discussions taking place on a MOO, a networked virtual reality environment for multiple users. 1994: after another two years, we have the first WWW conference at CERN, the birthplace of the Web. Two awards are granted to me – one for a distance course in the same programming language on which I sought information at the inception of the Web, the other one for the best campus-wide information system. Instead of referring to a real campus, this means the Web pages of a purely virtual, electronic university, the Globewide Network Academy (GNA), which I had helped found the year before. By this time, people started putting their résumés out on the Web. This is how I get to join Andersen Consulting, who have discovered the power of electronic recruiting. By this time, you can drop the President of the United States a line if you wish to do so. 1996: companies, even big ones, are trying to start to take the Internet seriously – many of them have not decided whether the Internet is a greater threat or blessing for their business.

My own use of the net has dropped sharply – I now spend no more than two hours per week there – answering email included. Instead, I have shifted my attention to Andersen's intranet, to internal email and the Knowledge Xchange, the company's knowledge-sharing network, where I get more quality of interaction by the minute. The GNA, founded three years earlier, now lists over 5,000 distance courses available over the Internet. No London newspaper with style misses out on the hype and all provide readers with a regular outlook on what's happening out on the net. It is getting harder and harder to find reliable information, the competition for superlatives is stiff. At parties, if you aren't yet connected, you're in the geek corner. (Six years ago, it was the other way around.) It is becoming difficult to say anything serious about the Internet. Being a modern citizen and less than thrilled by the net is like going to Florida without wanting to see Disneyland. And criticising the net isn't much better – a clever praise is followed by a cleverer critique, and both help sustain the public interest. International guru Clifford Stoll has contradicted his earlier enthusiasm and written three hundred pages of dark warnings[1]. The original clarity of vision, the message which reached people and ever more people, has turned into a rather amorphous area in which opinion counts for more than fact. But almost everybody's opinion is that there is great potential for profit in this medium.

Where does this leave me today at this conference, I wonder? Reading through the titles of the talks presented, I admit that I am filled with mixed feelings and I'd like to provoke you to take these in. At the very least I hope to give you some ideas which may help you to maintain your high standards of judgement and not lose your head in the heat surrounding the Internet, nor overrate the promises which seem to lie ahead. Instead of conservatism, this cautious view may lead to your understanding of my view of the Internet as a paradigm of change which deserves your most serious consideration.

The Internet as a paradigm of change

I claim that the Internet, or rather, the people sustaining it around the world on a daily basis, is one of the most important contributions to modern life in this century. The net is not merely a technology, and it is not a pure idea or philosophy either. Rather, like television or telephony, it is a new medium, pioneering new ways of interaction and collaboration between individuals at remote locations, with different cultures and languages. Indeed, the only common ground to be found among the participants of cyberspace seems to be their willingness, and ability, to exchange information electronically. The participants pursue this goal relentlessly, and often without much concern for the quality of the information. Again, this is not so different from the world of television: the early users of that medium did not worry too much about what was broadcast. Rules and regulations, or quality control, did not set in before the television audience had reached a critical mass. With regards to the marketing aspect, television is one of the most powerful contemporary media. One interesting question which you may ask yourself is: will the Internet reach the popularity of television as a globewide medium for mass information? You are probably in a better position to answer this question than I am – since many of you are trendsetters, and not only observers and exploiters of imminent trends.

However, unlike television, the Internet does not build on new and exciting ways to send audiovisual information to the eye: multimedia, which is enabled by the trendiest, most popular ways to use the Internet, is not a medium in itself, but an application using known media, each of which is less powerful than their clever combination. Rather than the television of the future, the Internet is a powerful paradigm for building and sustaining new communities, a true change paradigm. As such it is the most interesting alternative to centralized generation and dissemination of information. Maybe the most important point which I am trying to make today is that, in order really to be what it could be, the Internet needs to move on from information to knowledge, because knowledge, not merely information, is the major competitive factor in life.

Enabling the learning organization

For some of you, my last argument may ring a bell, and another buzzword may materialize: the learning organization. Let me now explore the potential of the Internet as an enabler for this type of organization. And instead of investigating this issue on a grand scale, let me focus on one of its real life incarnations: corporate training. My train of thought goes as follows: no business success without change, no change without learning. Change through a seamless, ongoing learning process applied to the workforce proves to be a stepping stone of realizing the full potential of the term learning organization, especially for large corporations. On a global scale, Andersen Consulting makes a continuing effort to educate its staff according to the highest standards. Much of its reputation stems from its commitment to be a learning organization. However, unlike the academic world, where education is often seen as an end in itself, Andersen's corporate training has a clear purpose: its consultants are trained to help clients to become more successful – this same vision of intelligent adaption to a rapidly changing world is now driving the rapid growth of the Internet. Moreover, I see the new prototype of a dynamic worker emerging from this techno-social revolution. In an age of globalization, the ability to receive frequent training and retraining will be mandatory for a worker to maintain a skill base demanded by the marketplace. The Internet, as the most comprehensive resource pool ever available, can be the tool and gateway for this continuous education and training. In this function, it has something to give to both companies and individuals alike.

On the practical side, Andersen Consulting has experimented with the import and development of Internet tools bringing distance education to its workers. In 1995, I worked with Andersen's Education division on a training project using a MOO, and in 1996, we have launched a Virtual Classroom pilot, getting closer to a world in which our currently Chicago-based training courses may be rolled out to offices around the world using a real-time, immersive and interactive learning environment. While Andersen Consulting is leading the pack, over the past year several Fortune 500 companies have recognized the educational value of virtual educational environments and are considering incorporating them into their operational infrastructure.

There is another very important side to the issue of Internet training: learning about the Internet. A remark which is of prime interest to marketing people: you need to understand the novelty of this new medium Internet. It is not like creating an advertising campaign for five different countries with five different languages and cultures, though there are common problems. This is also not solely about learning another way of markup and transferring your design ideas to a new technology. The Internet will force many companies to rethink their marketing strategies. It follows that as a firm which makes a living from successfully marketing your clients you need to give proper training about the Internet to your employees. To do so you need to be in touch with the communities forming on and the learning organizations enabled by the Internet. You have to change your frame of mind in a similar way as paper-based only advertisers when they had to respond to the rise of television. This time, however, you are a greater variety of people than ever using an entirely new medium, on a technical and social ground which is neither very well defined nor well mapped out. On the contrary, this ground is only slowly explored by the people using the new medium, with a much higher degree of interactivity and democracy than ever before in history.

From distributing information to managing knowledge

Enabling the learning organization all right – but we all know that there is more than enough enabling technology around: what about managing knowledge rather than only distributing information, in whatever innovative and exciting ways? Does the Internet offer a solution to this headache? The short answer is: no. The Internet will not solve our information problem. It has been said often enough that it will rather lead to more and more irrelevant information pushing into the households, landing on company desks, and finally in our bins. However, there is a longer, more hopeful answer. In giving it, I shall put my knowledge management hat on.

The input for knowledge management is business information. When cleverly managed in accordance with the demands of the business environment, it becomes a most valuable item: knowledge capital. A list of pros and cons for the Internet as a knowledge management tool will bring us closer to an understanding of a crucial value of the Internet paradigm.

As explained by Dorothy Leonard-Barton in her recent book *Wellsprings of knowledge*[2], successful knowledge management must employ four basic activities, shared by the company's employees. In short these address: problem solving through external experts; integration of new tools and methodologies; experimentation; and import of knowledge. Let us look at what the Internet may have to give (or not give) in terms of these goals.

1. The Internet can help us to draw upon cross-functional expertise to solve operating problems

   Pros: the Internet supports communication on a globewide scale. There is virtually no topic under the sun without an expert who is on the net. The net is strong in creating such potentially productive contacts; it helps sustain worldwide expert communities.

   Cons: there is no guarantee that the assumed existing expert can be found, or that such an expert is readily available. The net is poor on the delivery side. An expert contact may be made through the Internet, but the more serious business of actually getting and providing consultancy needs off-line, face to face meetings. There is potential for cross-functional expertise though, in practice, some of the most powerful expert communities like Computing and Information Technology show clear signs of segregation and hide in an electronic fortress sheltered by jargon.

2. The Internet can help us with the integration of new tools and methodologies

   Pros: tools and methodologies are part of the available Internet knowledge offerings. Maybe more importantly, it is a place where new strategies and methodologies can be tested on a very diverse, and usually enthusiastic audience. The diversity of approaches and methodologies present on the net is a key to this capability.

   The Internet is rather immune to changes of the PC and software market. Five years ago, it mainly resided on an academic network, both server and client workstations used to be UNIX boxes. The Mac came and went by. Now the PC is the dominant piece of client hardware. And tomorrow, the Internet may even be freed from personal computers altogether. Integration of tools is another true strength of the net which to a great extent resides on the labour of an enormous army of restless hackers around the world.

   Cons: there is very little hard information on what does and what does not work in terms of methodology available on the Internet. Three out of four Internet reports which I get on my desk are poorly researched – the makers of these reports obviously feel that the amount of excitement over the net frees them from their responsibility as professionals. This is likely to change the longer the Internet attracts the attention of the commercial world, and the more people get a firm grasp on the real values of the Internet. With respect to platform independence and tools integration: what the techie sees as a comfort, often lets the layman despair. The diversity of access methods may soon compete with the tariff market of cellular phones. Yet, the customer may profit from this diversity through low prices.

3. The Internet allows us to experiment

   Pros: it's true – the Internet is a wonderful place to experiment and learn through playing. Other than television, it has many corners in which interactivity is the main element of a unique learning experience. It is amazing how creative people can be if society lets them and if technology helps.

   Cons: it is said that the Internet is too open a system, that not experiment and play, but anarchy rules. What we are witnessing is a result of the diversity of people participating in a big experiment. But they do need some regulation and guidance. Other side effects of the Internet as a field for experimentation include the addiction of the unguided individual to the electronic world, impoverished social, that is face to face, contacts, and pornography as the most wanted good on the network. Especially the latter is a sign for how much remains to be done for advertisers of professional information. One cannot have complete control and total openness at the same time. As a matter of fact, there is now a great number of initiatives on the net which do provide guidance and exert some control, though most of these have arisen from grassroots rather than government regulations.

4. The Internet can help companies to import knowledge from the outside world

   Pros: in fact, first in the academic, then in the commercial world of IT and computing, the Internet has become one of the most important resources. In the view of experts, it can compete with many far more expensive online research services. An Internet connection opens a firm to the world in many respects – the positive of which are: access to a world wide reservoir of information sources; electronic mail contact which is faster, cheaper and format-richer than surface mail; the opportunity of marketing one's firm to the world; comparing information across a globewide background rather than based on personal networks; unique recruiting opportunities etc.

   Cons: no central catalogue is available for the maze of resources. And it is unlikely that there will ever be one. What's all the information good for if we don't know about it and cannot find it? The way out may be the creation of smarter and smarter search engines. Also, it is nice to have access in principle, but what about performance – email is fast, but downloading a video can be painfully slow. Businesses whose success depends on fast processing of data do prefer their own, high-powered pipelines over the public Internet. It is unclear when or whether this performance issue will be settled. Currently, there is often poor return for search time investment though this is not a principal problem.

   Recruiting is great in the beginning but needs thought and preparation – or the company may get completely swamped with misdirected requests. Information from the Internet is fragile – nobody promises anything as of yet. This is likely to change with the arrival of better cash transaction, or digicash methods. Openness to the outside world can be a great competitive advantage – or a bad mistake if confidentiality is an issue.

What do we learn from this excursion for marketing on the Internet? To repeat a central recurring argument: the greatest advantage of the Internet today is its diversity – diversity of information, diversity of people and cultures, diversity of methodologies. Diversity provokes change. The potential of the Internet both as a knowledge management tool and as a resource is limited only by the amount of knowledge available on this planet. The greatest strength of the net is also its greatest weakness – it is a basically still unregulated environment, with confused governments and players who, instead of forming alliances, duplicate or work against one other. Marketing experts should not try to obscure these facts – after all, the good news is good and exciting enough – instead they should contribute to the education of the private and commercial public by helping to assess the real value of the net. At a recent Labour conference, it has been pointed out that not only companies operating on a global scale, but also small and medium sized businesses may profit from an online presence. Secondly, good marketing on the net can help overcome the segregation of knowledge communities by providing real information across boundaries. And finally, profitable marketing on the Internet will provide support against the fragility of knowledge on the net: the arrival of money on the scene sharpens the sense for reality. If I ask for a return, I need to provide quality.

I personally do not think that the commercialization of the Internet will affect its power as a paradigm. It seems rather naive and counterproductive to want to preserve the Internet as a paradise where everything is apparently free – while in fact, every byte transported on the net is paid for, in one way or the other. Business forces are among the most innovative and creative in our world and will find, or rather shape, their place on the net, with marketing as a key strategy element.

Conclusions

In this talk, I have tried to embed the reality of the Internet in a wider vision – as a community enabling tool. For companies and individuals alike, there are more and less interesting communities. Learning organizations, consisting of learning individuals, are very interesting ones. Marketing on the Internet at present mainly addresses the community of consumers – which may justify a short term interest in the net as a place to invest, but does not justify changes to long term strategic decisions in information technology and applications. I argue that it is the question of content which will decide whether or not we will be interested in the Internet a number of years from now. In a global market, quality of content is linked to communication among the players – I therefore encourage the formation of large, if possible supernational consortia to define tangible gains of investing in the Internet. The World Wide Web already has such an international structure based in Boston. It does, in my opinion, not sufficiently reflect European, or, for that matter, non-American interests. In education and training, such a consortium, the Globewide Network Academy, exists as well.

Publishers will find that they have a better stand in the battle for future electronic markets if they work together on these issues. Marketing firms should form transnational alliances to learn about the Internet, the needs and wants of its users, in the spirit of my advice given earlier on learning about the net. This seems a must given the breathtaking growth of the net. One reason why advertising on the Internet is not as successful as information brokerage, to give only one example, is that marketing companies have not done their homework on the new medium yet. This is a task which can be more easily tackled by working together rather than against each other. It does not affect competition, because you will be sharing knowledge, not results, and your clients and the public will judge who can translate this knowledge best into marketing strategies.

If there is any lesson to be learnt from the success of the Internet, it is that collaboration and sharing win over isolation and secrecy, and collaboration and sharing, on a globewide scale, will profoundly influence the future of marketing. If you are going away from this talk believing in this message, then I have done my job well today.

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Professional futures – why the prospects are so rosy

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Paper presented at the Aslib Conference on The Future Information Professional, held on 28 -29 May in London.

Abstract
Many information professionals fear for the future of their jobs as a result of further IT implementation, corporate downsizing, outsourcing and other influences. However the author feels that prospects for the profession have never been better. Through the use of IT, the information profession will find a means dramatically to change the public perceptions of information professionals.

I'm here today to say why I think that, for all the fears of some information professionals about their jobs being usurped by IT, downsized, outsourced or whatever the buzz phrase will be in a few years' time, the prospects for the information profession have never been better.

Let me also say that I think that in IT, the profession will find a means dramatically to change those public perceptions of information professionals as grey, middle-aged, spinsterly and bespectacled. (I'm pleased to see that the audience bucks that trend – it's at least 15 per cent male (which says *something* about equal opportunities, even if it's not politically correct!) and lots of the women here have obviously stepped out of the designer pages for senior management in the City.

Why do I think that the prospects are rosy? And how does my optimism tally with the sort of article appearing in the computer press, not to mention the *Financial Times,* which proclaims a wonderful new age of electronic librarians, intelligent agents, and natural language searching, in which machines will do all the work, including electronic abstracting? Can all the work really be done by IT? What work is better done by IT? Where does the information professional add value? And what new roles are emerging for all those who have undergone a formal training in information management?

Challenges to the profession

It would be naïve or disingenuous or both, to deny that the profession faces challenges. However, I choose that word advisedly, and you will notice that I did not say 'threats'. Moreover, I believe that it faces two sorts of challenge. The first of these is not from 'downsizing' as a result of the industrial revolution, the shakeout in white-collar jobs, which has been a feature of the last decade. It is instead from a potential failure to recognize and grasp new opportunities that are already apparent for those who like to spot trends.

The second is the challenge to avert a failure of vision and imagination on the part of the politicians and leaders of this country. This profession must demonstrate clearly the possibilities that exist for creating a new industrial base (and the dangers of failing to recognize and nurture the new information based industries and activities). And it must be said that this is where there are threats and not only to us, but to the whole country, if we fail to do the job properly.

My thesis – or one of the themes of this talk – will be that while, due to lack of funding, some jobs in public libraries may be disappearing, not only new and different types of 'traditional' job in service provision will be created, but that new professions and new roles are emerging and will continue to emerge as the Information Society matures.

Moreover, these new professions are open to the traditional information manager, if individuals are prepared to take responsibility for aspects of their personal professional development and go out and learn the additional skills that they will need to have an enviable advantage over everyone else out there, competing for the same jobs. For while it is true that the ground beneath our feet is shifting and changing, it is also true that it is doing the same thing for everyone else. The difference is that the professional information resource manager and practitioner, the manager and exploiter of business information – whether sold as a commodity or exploited as a tool and a resource – has a unique competitive advantage over non-specialists trying to enter the brave new information world, with its new and highly desirable jobs. Provided, that is, that that individual realizes what skills he or she is blessed with and makes the most of them.

In my view, in this changing environment, the only risk to the information profession is actually a self-inflicted one of sloth and inactivity, of failing to be entrepreneurial and pro-active enough and seize opportunities when they present themselves. Information professionals are *uniquely* qualified amongst all the professional classes to adapt to changing times and survive. Moreover, unlike dinosaurs, they have large brains relative to their body weight and ought to be an excellent example of Darwinian fitness in the league table of species adapted for survival!

But enough of these teasers and riddles. What exactly do I mean, and why, contrary to some colleagues who work in public sector institutions, am I so optimistic?

Changes in the information professional's working environment

a. Libraries

Let me take a look first at traditional jobs in recognizable resource centres containing at least some books and journals in hard copy, old-fashioned print media. These have already been transformed, as anyone visiting a university library (though not necessarily as yet all public libraries) will be aware. First to go were the old-fashioned card-index catalogues, then the cataloguing departments. Job losses? Yes, but not jobs to really mourn. They have been replaced by others in service provision that utilize much more that host of specialist skills and attributes which librarians have always had but have rarely been freed up to use: specialist knowledge of information sources, special ability to train customers in the use of information systems, advice and counselling skills; and, at the strategic levels, planning, project management, financial and operational skills for the new networks and resource centres with access nodes likely to replace the traditional library or document centre.

Changes in jobs in this field represent shifts in emphasis, not changes in kind, however. What *are* the prospects for resource centres housed in one building? And if these are not going to experience growth in job opportunities, what will replace them?

I do not think that anyone in this audience would disagree with me if I say that resources will, increasingly, be available in electronic form; that there will not necessarily be so much shelf space needed, and that more users/clients will consult the library from a remote site. There will therefore, undoubtedly be fewer jobs in reference libraries which involve actual physical handling of books and journals. Reference information, usually consulted in relatively small, dense chunks, has benefited enormously from electronic publishing with its huge advantages in compactness and searchability, and this trend will continue and expand. So more of those 'traditional' jobs, manning the site, will go, joining others rendered increasingly obsolete thanks to such tools as bar codes and electronic catalogues generated by publishers and bibliographic agencies and (in this case, possibly a genuine case of dinosauritis – the subscription agency). Multimedia too will come into its own, and it is at this time by no means clear that information providers in this medium will necessarily expect to service all customers for the product using the library or resource centre as an intermediary for a large proportion of the potential end-user base.

It is nonetheless true that until someone develops screens that are comfortable to read, monographs, like novels, will be more comfortably dealt with as they come at present – in information packages we would recognize as books – and no-one yet has resolved the problem of newspapers in print as opposed to electronic form: you cannot scan the pages of a broadsheet, in order to get a sense of the weighting and prioritization of issues on a screen in the same way that you can the actual paper, simply for reasons of scale. So, there will still for the conceivable future be documents stored in paper form.

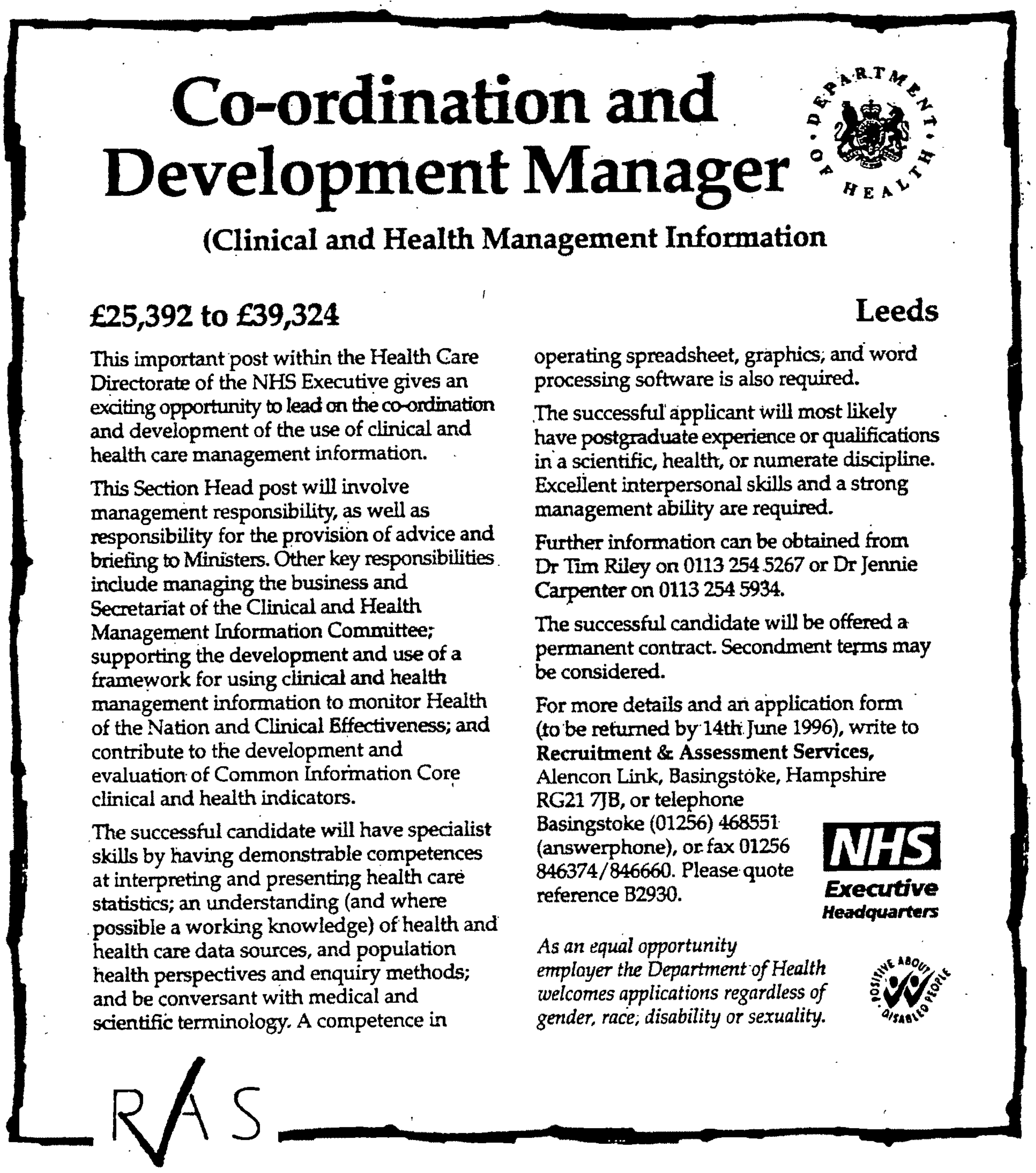
The growth area, perhaps, is in how we deal with the problem of information overload, and, still in the context of the 'conventional' resource centre for the moment, let me just remind you of a number of familiar issues.

Firstly, we do not yet know how information sources will be charged for in future. Will we, using specially developed search tools on the Internet, be able to generate abstracts from all the relevant published material, so that we can see at a glance what is of relevance to us, or will the cost of obtaining some of this material (and the time that it takes to process the information and download it) prove prohibitive? Will it be 'libraries' or online service providers who build up specialist directories of document collections that can be consulted by members of the public at a reduced fee (by virtue of sharing with others), or at a higher rate fee (to pay for the added-value service)? From the point of view of the profession, it is academic as to which organization will be responsible for most service provision, since the people who assess the actual information and whether or not to incorporate it in a service, or purchase the information it carries for an organization, are likely to be from the same profession in any case, even if they are on opposite sides of the fence as far as charging is concerned!

Again, who will assess the ensemble of material that is available and determine whether it is complete; if it is not, what is missing; and if that material is missing, why is it missing? There are additional hoary old questions of price, and of whether the information made available in this form could not be obtained more cheaply (and quickly) from elsewhere. As the problem of the growth in volume of information increases, that long-celebrated skill of the profession, the ability to sort from what is available only that that is valuable, and often, to know in advance whether or not valuable accessible information is available at all, will come into its own as never before.

And of course, barely touched on here, are the super-sophisticated skills of the information manager at the conceptual phase, that expertise in compiling thesauri, setting up databases that collect information in ways that are useful to the searcher; and the other, more technical, information-handling skills associated with information science, without which there is no quality of life in information retrieval. To make a crude analogy, think what a difference it would make to everyone's life if an information scientist had compiled the old printed Telephone Directory, so that we could have a consistent policy with regard to the entries for example, for government departments. So that we would know whether to look for DTI, or Department of Trade and Industry, or Trade and Industry, Department of and not have to use a different procedure or set of principles for every different government department as at present!

In real terms, all this is developing into jobs such as the one I saw in a copy of the Public Sector Jobs section of *The Guardian* last week. Not advertised in a traditional LIS medium at all, it said:



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And note that I picked this one at random – information jobs are appearing more or less at random in all sorts of non-traditional outlets – non-traditional, that is, for library and information professionals looking for new jobs.

For the more traditional job, then, there will continue to be strong demand – even if henceforth the job is located in slightly different contexts, less in the library, for example, that out at the grassroots, at the enquirer's desk in the business community or commercial organization; helping to guide children at school; in an information service context, whether that be a Citizen's Advice Bureau, a TEC, a Business Information Service, a law practice, a post office or something else. The work will exist, even if it is less frequently located physically in a dedicated information resource centre housing material on a wide range of subjects all kept under one roof – and even if it is described as something different from what the information professional is looking for.

So much for traditional jobs.

b. Special information services – the special library/ information services approach

The growth area for jobs for the information profession are in many areas: firstly in established professions now using techniques for the management of information learnt from the 'information' profession, by which I mean those who studied in one form or another, information science – electronic publishing, multimedia design, computer-based training, to name but a few of the obvious ones. Secondly, it is in professions which have always used information professionals, but which are now experiencing exponential growth in terms of how they accumulate, store, retrieve, process and recycle data – health, the police, employment, education, in the public sector, and everything you care to mention in the private sector from property and construction, law, motoring, tourism and sport, to services and retailing.

This is quite apart from the developing new professions, many of which are no doubt yet to appear, but some of which we can point to by way of example – the hybrid animals that are emerging from a combination of records management, business information systems and operational research as a new type of strategic manager, those who 'design' or redesign organizations to maximize the efficiency of information flow inside them – and the accumulation of usable and recyclable data and documents: data miners who interpret trends currently concealed by old methods of capturing data to reveal new information about customer bases, about patterns of consumption and demand, about sequences of events that trigger runs on stock; about almost anything you care to mention, and which therefore may require that organizations radically restructure their whole operations. These are the jobs, the new ones, that include in the strategic planning not only information created elsewhere, and brought in as discrete and complete, pre-existing units like books and journals, but the management of the information that will be generated as a result of the organization's new operations.

There is today barely a new job being created that is not information-based – one hears figures mentioned casually such as 'one in two', and these are jobs quite outside the jobs that are traditional 'supply-side' jobs of information generation and provision, or 'traditional' library service-type jobs.

Today boundaries *are* being blurred – my own organization, the Institute of Information Scientists, itself once hostile to publishers – the enemy when it came to copyright and negotiating of reproduction rights for the user, now welcomes electronic publishers with open arms. Many who would once have styled themselves as information intermediaries will say in the same breath that they are also information brokers. So, if others can poach on our patch, the converse is true. Indeed, if the information profession did not decide to compete with others on what is non-traditional territory, one could just about get away with accusing them of being the worst ostriches in history!

The information profession – this part of it, *our* part of it – is uniquely well-qualified to challenge other specialists on their own turf. It has the optimum combination of skills and attributes for survival in the information society – it always has had these attributes, if only they had been recognized, and what is extraordinary is the low self-esteem in a large part of the profession. What information professionals bring to the job are the survival tools, the strategic management tools, the communication tools that should guarantee a job – whatever title that job carries – in the information society, whatever twists and turns its development over the next few years may take. To be more specific – the actual information management tools – cataloguing, classification, thesaurus construction, of interpretation, research techniques, retrieval methods, presentation, quality control and standards, the IT skills – not only the ability to use many packages, to search online databases and CD-ROMs, but the actual systems operation techniques; the communication skills – writing, presentation, graphics; the data analysis tools; the business skills – financial, planning, project management, public relations and marketing; the human and interpersonal skills – those customer service techniques, the sensitive insider knowledge of organizational culture, and the ability to recognize internal shifts and emphasis – and when there is a subtle change in the way a company positions itself; the ability to plan strategically and think long-term while at the same time understanding the detailed operation of the systems that underpin the organization's activity. And so on and so forth. All this, quite apart from the specialist subject knowledge brought into branches of the profession by entrants at postgraduate level – or indeed those who have worked long enough in one particular subject area to acquire a knowledge of sources and their value to the organization that can outstrip even that of the professionals the information staff service. If ever a profession's star appeared to be in the ascendant, it must be that of the information manager or specialist.

It *is* true, of course, that opportunities will not present themselves without a degree of pro-activity on the part of individual information professionals. It *will* be necessary for the conceivable future to keep IT and online search skills up-to-date. It may well be advisable to brush up those statistical and data analysis skills. It will almost certainly be necessary to learn how to construct and use spreadsheets, if this is one skill that is missing, thanks to training having been done in an earlier incarnation before they were invented.

Bear in mind, however, that even if you are tired of running to keep yourself at the same level on the employment scale, it is nonetheless true that everyone else is having to do this too. Few outside the information profession come to it with so many advantages as yourselves.

In the final analysis, it strikes one as very odd that the profession should be so under-confident in pushing itself forward. Why is there at times so much demoralization, beating of breasts, gnashing of teeth and weeping and wailing? Why indeed? If only this profession realized what it had to offer – what it always had to offer, and now has even more. What every information professional who is not reborn in the new image of the information age needs is an image consultant. And a wordprocessor to reconstruct that tired old cv.

It's time to think to laterally and put into practice a few of those old thesaurus techniques – never mind if the job title does not carry the word 'information' – read between the lines of the small print. Then make use of some more techniques learnt on the job and reinvent yourself. What skills and attributes can you bring to a new employer? What did individual triumphs prove about the way that you tackle – and solve – problems? See your portfolio of skills through the eyes of an outsider and see them for what they are – a unique survival kit for these sometimes uncomfortably interesting times in which we live. Then go out and take over the world.

Management development for information professionals

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Paper presented at the Aslib Conference on The Future Information Professional, held on 28 -29 May in London.

Abstract
Professional education in the library and information sector has only provided for first qualification level: through undergraduate and postgraduate programmes which meet the criteria required for accreditation by professional bodies (including the Library Association, Institute of Information Scientists, British Computer Society). The management curriculum within such programmes has offered knowledge and skills relevant to earlier perceptions of the needs of first professional posts, with middle and senior managers lacking substantial information-sector- specific programmes to meet their needs for advanced education and training. Two British Library sponsored short courses provided a model which stimulated the development of the Loughborough MBA (Information and Library Management) programme, offered jointly by Loughborough University's Business School and Department of Information and Library Studies. This flexible, part-time, advanced masters degree, 'badged' for the LIS sector, also provides intensive short-course opportunities for UK and overseas participants.

Management development needs

Library and information workers are managers, as well as information professionals. Every library or information service, whether a small, one-person band (the 'SME' of the sector) or a large academic or industrial information service, experiences the whole range of issues found in any other organization. Resourcing, staffing, procurement, materials organization, inventory, delivery, marketing and, above all, satisfying clients' needs, are at least as relevant to the information manager as to a McDonalds restaurant manager.

Information professionals therefore require a portfolio of knowledge and skills to enable them to handle such a demanding role effectively. This need has been driven especially hard by the rapidly changing context for services. Competition for resources, new modes of information delivery via the Internet and the impact of IT on work practices, are just a few of the issues facing managers. An emphasis on serving the 'customer' has been especially influential. Library and information services (LIS) are now facing more challenges than ever before both to anticipate and satisfy customer expectations, whilst balancing these against static or dwindling resources.

The problems are not only for senior management. Librarians at junior and middle management levels are having to deal with increasingly complex situations. Quality management, business re-engineering and marketing are becoming significant further down the organization, as empowerment, devolution and delegation take hold. 'Delayering' and 'downsizing' have had their impact on the increased involvement of new professionals. Library managers at all levels therefore need a wide range of skills. In particular, they have to be critical in assessing the relevance and value of modern management techniques to meet the challenges facing them.

An education for those entering the library and information professions has, however, traditionally provided little in the way of specifically *management* inputs to help them. The management curriculum of the mainstream management disciplines as taught by Business Schools includes the following core subjects:

organizational behaviour
human resource management
financial management
marketing
operations management
strategic management.

Most of these subjects were largely absent from library and information studies undergraduate or graduate programmes, though, until only recently. At best, they were taught peripherally and superficially. The role of the librarian as a manager in an important service sector had been underplayed by library educators. This is changing, but for many middle managers in posts within library services the reality is that their initial professional education has not prepared them to undertake many of the complex managerial activities expected of them now and in the future.

In the past there has been much more emphasis in LIS professional curricula on the functional role of the information professional, although even the notion of a core professional curriculum is proving difficult now, given the move of 'Library Schools' to much wider markets.[1] Handling information, designing information systems and 'managing' collections have largely comprised the curriculum. This also usually included some inputs on financial planning, but only insofar as they were felt helpful to understanding how collections fitted within the library's overall budgeting processes. Those skills and knowledge required for actually managing a total service, with all that entails by way of budgeting, resource allocation, staff management, and especially strategic decision-making, were largely omitted. Inclusion of only a few topics from management science to underpin the core areas of the traditional education for librarians was the pattern in professional education during the 1960s through to the 1980s.

The management curriculum: the first stage

Why was this the case? The main reason is that the curriculum developed by SLIS has been a natural outcome of their perceived role and their response to the demands of the market. In the past, Schools of Library and Information Studies have had as their prime purpose the preparation of information professionals to undertake functional tasks across all kinds of information and library services, at the level of the first professional post. There was a a perception that these posts did not demand particular management knowledge or experience. Management skills which were felt to be needed could either be learned 'on-the-job' or acquired through in-house or external training programmes. Management was also seen as an activity for those further up the organization and therefore not relevant. While SLIS have also been involved in Continuing Professional Development (CPD) programmes to meet the needs of librarians requiring further management education, these have usually been a peripheral activity.

Much of the innovative CPD work has come instead from the library and information profession itself. In-house training, professional association short-courses and consultants' conferences and training programmes have been provided to fill the gap. The main activity of SLIS has been their undergraduate and postgraduate degree programmes for new entrants to information work. Graduating, newly qualified professional LIS workers have not been prepared by SLIS to understand more than the rudiments of management principles. This situation is true not only in the UK and in Europe generally. In Australia too, for example, the main impetus for the development of intermediate and advanced managerial skills in the information workforce has come from within the library profession rather than SLIS[2] and, as Johnson found in a 1991 survey of education and training, while management education was beginning to develop in SLIS, the emphasis continued to lie with entry-level programmes.[3] These have provided scant opportunity for in-depth treatment of management issues and have only touched on some of the major issues identified above as important for LIS.

In offering undergraduate and postgraduate programmes which lay the emphasis on information management skills (defined particularly as the manipulation, organization and retrieval of data), rather than information *service* management skills, SLIS have, however, been responding to the demands of employers. The market for professional information workers has been geared largely to jobs for skilled information operatives, who have been educated as information managers rather than information service managers. The distinction between these two concepts of information management and information service management have played an important part in the development of the curriculum.

Programmes which place an emphasis on information management produce qualified information professionals who will possess those competencies (the mix of knowledge and skills) which are needed for the provision of the building blocks of an information service. It is this skilled functionalist who has been in greatest demand. However, information professionals educated for these operational functions will not necessarily have a full grasp of those concepts which enable them to analyse the context within which these services are being provided. Neither will they be able to assess the market's needs, and the organizational, strategic and human resource management issues with which an effective manager in any service has to engage. There appears, though, to have been much less interest on the part of employers for newly-qualified librarians/information workers to have the highly developed management knowledge and skills which enable them to perform this broader function.

This is changing quite rapidly. The support of education and training has been demonstrated as essential for the design, development and delivery of information services. The Fielden Report, for example, is one of the latest of many studies to have highlighted the need for more effective management education and training to be made available for library and information personnel in order to support strategic change in library services.[4] There is clearly need not only for librarians to be managers of information but also to possess those skills which will equip them as managers of information services. This is now beginning to be accepted by senior library managers. The implication for SLIS is increasingly, therefore, that they will also be required to recognise this in their initial education provision for the information professions, and in their CPD programmes – where they have not already done so.

Management education needs: the new era

It is helpful when considering the development of the LIS curriculum to outline in more detail those changes in the library and information professions which make advances in management education a high priority. In this new era for all library and information services the significance of the librarian as an effective manager is more important than ever. LIS face a less comfortable period than that of the 1970s – and even early '80s – when resources were more plentiful, staffing patterns generally more stable and secure and accountability to the user/customer was largely an underdeveloped concept.

All of this has dramatically changed: shrinking resources, changed organizational structures and an acceptance that 'customer care' is an insufficient concept with the need instead for closer attention to quality assurance issues, mean that library and information professionals often have significant management responsibilities even at entry level to an organization. The most junior professional librarian will play a major role in determining the quality of the service and in providing leadership on a quality approach to customers. The impact of technology has inevitably been profound: Internet access, multimedia, electronic publishing, distance learning are rapidly changing the ways in which information is stored, accessed and used as well as on the management of collections.

Through the influence of all of these factors, the role of the information professional, whether 'traditional' librarian or information scientist, has changed commensurately.

What has been the effect on the actual jobs of library/information professionals and, hence, on the knowledge and skills they require?

An analysis of the new role of the university librarian provides a useful case which is applicable across the information sectors.[5]

1. There has been both role convergence and divergence

Library and information services now depend on the management of IT skills and resources for both the content and delivery of service. There is a consequent need for links between the operational and strategic planning of the service. There is also overlap between the the roles of the information/librarian subject specialist and computer service information adviser, particularly with the increasing significance of the Internet. Interpreting the value of overwhelming quantities of information available electronically is an increasingly significant element in services. The management of support for information users (teachers and learners in the academic environment) is also more important. In universities and colleges, academic staff numbers are remaining static in a period of expanding student populations. LIS roles are therefore converging on teaching and learning support.

2. Staff management

Recruiting and retaining the right level of staff, with vision, energy and appropriate experience, are essential. Restructuring of staffing places more emphasis on junior posts and the elimination of the professional/non-professional divide and removal of barriers to promotion – together with effective motivation strategies – are important if people are to be encouraged and their efforts rewarded. Staff development policies and training practices, as well as job evaluation, are essential.

3. Leadership and management

The common pattern of skill requirement across all workforces has been that at junior levels there is more emphasis on clerical skills, at middle levels more on specialist professional skills and at senior levels more on management abilities. However, the need for all levels to be more involved in implementing effective management practices has become apparent. Managing aspects of the LIS, or even the whole service, is no longer just the territory of the professional librarian/information specialist. Devolving responsibility down the organisation and involving all staff in quality issues has become important. Even middle-grade professionals are having to deal with significant management issues. At the same time, the role of the senior manager – the service director – is now more demanding than ever. This job encompasses:

- managing the library/information service's responses to environmental changes;
- positioning the service in its market and applying relevant marketing techniques;
- procuring the necessary resources to sustain and develop the service;
- managing the human and material resources of the organization;
- ensuring quality of service delivery through the application of relevant quality assurance procedures (including applying performance indicators, gathering, assessing and using management information, organising and implementing regular service audits).

Changes in higher education which have resulted in this emphasis on applying management principles at all levels within academic LIS are reflected across all of the public sector: library managers in public libraries, health sector libraries and school libraries have similar issues to consider. The above example of the academic context also has parallels for library and information professionals in the private sector who similarly face convergence between information and computing functions, the need to manage electronic information delivery and the range of strategic and human resource management issues which face all organisations.

To summarise: library and information professionals in all sectors have to *manage*, and manage more comprehensively and effectively than previously, at every stage in their career paths, in order to safeguard the survival of their services.

The role of higher education

SLIS are faced with the challenge of supporting the library and information professions in the education of all professionals to meet these needs, even those at the very start of their careers.

However, as we have seen, more attention needs to be focused on the needs of middle and senior managers for advanced managerial skills. Typically, these managers graduated some years ago with a first or masters degree which may have contained little formal management elements and they either lack the in-depth understanding of management science necessary to perform the increasingly complex and demanding management tasks required in modern LIS, or they have an incomplete portfolio of skills. The Fielden Report reviewed evidence from a range of countries and concluded that this dearth of advanced management education for LIS managers was a world-wide problem: the issues were similar, but there were no ready-made solutions.

It ought to be noted at this point that if SLIS do not provide such solutions then employers themselves, or others, will step in to fill the gap. The Scottish and National Vocational Qualifications (S/NVQs) could be seen as offering the answer to hard-pressed, busy professionals requiring a more significant input of management education/training. The emphasis in the S/NVQ system is on the practical application of knowledge and skills, not the traditional knowledge-based curriculum of most education programmes. This offers an attractive option to employers, who require effective management *functioning* from their managers rather than a broadly based management education.

The performance of tasks here and now is the thrust of the S/NVQ movement. The Information and Library Services Lead Body has now reached the stage of developing Level 5 – assumed to be the level at which senior managers achieve those competencies required to manage at the higher levels in an organization. While the narrowness of a 'here and now' approach to management training is a real problem with the whole S/NVQ philosophy, it does, nevertheless, offer attractions to employers in providing for apparently lower-cost and immediately relevant programmes tailored to individuals' needs.

The implications are enormous. Intermediate as well as advanced professional management education in the LIS sector is in danger of being delivered almost exclusively 'in-house' or by training agencies. There are, of course, opportunities for partnerships between SLIS, employers and agencies, but the initiative could also well be lost by traditional educational providers, with advanced management education delivered through training courses rather than well-considered educational programmes. Internationally, similar developments are under way – in Australia and New Zealand, in particular. There are also European community schemes to establish equivalences between vocational qualifications. Such initiatives have especial relevance when distance learning and electronic training delivery are being considered.

Professional organizations, too, are providing more and more courses for middle and senior managers, and here the pattern similarly appears to be internationally comparable. Whilst many of these developments involve SLIS as partners, there is a clear message that competition for the CPD market is intense and that higher education institutions need to develop viable and attractive alternatives that offer the best in high quality education for exploiting the future potential in organizations, as well as training in the specific, readily identifiable competencies for present functions.

Library and information services are also either providing their own in-house training programmes, or are funding or supporting managers to undertake general management qualifications. The advantage of this latter option is the experience gained from other sectors, which can feed valuable new insights into the organisation. The Diploma of Management Studies or Masters in Business Administration (MBA) has been the choice of many LIS professionals seeking a portable management qualification which will provide them with the higher-order management skills they need as well as this broadening of experience. This has been the pattern in other professions – in Education for example, MBAs and other advanced management degree programmes have been developed. (Nottingham University is one prestigious UK institution offering an MBA in Education.) However, there has been a lack of such course structures developed specifically for senior LIS managers.

In order to begin providing for this need, the British Library Research and Development Department funded two courses for senior managers across all LIS sectors, one in 1991 and a further one in 1993. (This latter programme was also supported by a range of other sponsorship and included two participants from the EU.) They were intended to provide intensive and high-quality programmes on the theory and practice of policy-making, planning and strategic management and to offer insights from beyond the LIS sector. By the end of the programmes participants were to have developed a considerable depth of understanding and to have applied theoretical principles to the situation in their own LIS, using a range of management principles and practices. Skills of analysis, problem solving and communication were to be refined. Each course comprised a 10-day intensive residential period during which the programme was delivered, followed by a project phase over the following four to six months, including a further residential period. Contact was maintained between the Consortium members who organised the programmes and the course participants. Projects were developed which benefited the organization as well as the course participant.[6]

These were not self-financing programmes, and depended for their viability on considerable funding support. They also demanded commitment from the those organizations sending participants. Course members were busy senior managers (typically, at deputy level in an academic or public library service) and they were expected to devote scarce time and energy to the course and project. The programmes did not offer participants any management qualification or certification. However, despite inevitable difficulties, these programmes were an important milestone in the development of senior management education for LIS professionals in the UK.

They largely followed the model developed by the University of California, Los Angeles SLIS Senior Fellows programme which was related by Hayes to senior management training needs in UK libraries following a survey for the British Library.[7] A mix of formal inputs, group discussion and teamwork-based projects, together with the individual project element, was identifed by survey respondents as the desired curriculum. It was also seen as important that cross-fertilisation of ideas from across the LIS sectors was included, as well as relevant inputs from the commercial sector. A further lesson which has proved invaluable for future curriculum development was that the level of input should be high. These experienced managers required considerable depth as well as breadth in their advanced management education.

There have already been developments arising from these programmes. For example, a new sector-specific short programme for academic LIS has been initiated, designed by representatives of SCONUL, UCOSDA and the Library Association in collaboration with the University of Aston Business School. The pattern in all of this has been that of increasing the management inputs from the commercial and not-for-profit sectors beyond LIS and widening managers' exposure to management principles as well as experience. In meeting the needs of LIS managers in the new information service management environment the emphasis is clearly on learning from good practice elsewhere. This is expected to continue as management education for the sector moves on to meet the demands of the new era for LIS, with a heightening of the quality of that education.

MBA (Information and Library Management)

In this curriculum development process, therefore, there has been considerable emphasis not only on grafting management science on to LIS education but on adding the value that comes from identifying those aspects of management science education which have particular significance for LIS. Scarce resources for training demand that such programmes have immediate relevance to the student and to his or her organisation to meet the gaps in past LIS education which the S/NVQ movement is beginning to address, as well as providing wider career opportunities and scope for personal development.

Links between established Business Schools and SLIS have therefore become significant in developing more substantial programmes, as well as offering the short course opportunities like that of the University of Aston. Sheffield University's Department of Information Studies, for example, has had long-standing input to an MBA programme. However, until recently, there was no dedicated Masters Programme in Business Administration for LIS professionals in the UK following the model of other professions, one which would provide for these sectoral-specific elements, together with portability between the information and other sectors.

Discussion with those participants to the two BLRDD programmes and with members of the Consortium who delivered them, together with wide consultation in the profession, indicated that the time was right for such an initiative. Consequently, Loughborough University Business School and the Department of Information and Library Studies are now launching such a part-time programme. (We are also developing a joint undergraduate programme in Information and Management to provide similar career flexibility at first professional level.)

The learning objectives of the programme are that it will provide both immediate and long-term benefits to both the students and their employers through:

1. the development of advanced management skills and techniques
2. the delivery of a broad theoretical knowledge of the principles of management across a wide range of subject areas
3. the development of relevant theory and skills for the library and information sector, centring on practical problems at work as well as the enhancing of conceptual and analytical capabilities.

The subjects covered include:

human resource management
financial management
marketing management
management information and decision support systems
operations management for library and information services
research project management
strategic management.

Within these broad areas, those needs of LIS managers which were discussed above, will be met through in-depth exploration of the issues facing the information professional during the '90s and into the next century.

Enhancing skills in computing, data analysis, problem solving, communication, leadership and motivation and developing senior management potential will also be significant vocational objectives.

The programme is to be organised by block release delivery method, in one-week residential components. The minimum period of study will be 18 months. The advantage of this type of delivery is that overseas students can study one or more of the modules as a short course, as well as having the option of undertaking the full programme.

Teaching and learning methods will vary from traditional inputs through lectures to case studies, practical lab sessions, simulations, group projects and practical exercises. It is expected that the dissertation projects will be of particular value in developing students' learning experiences and research skills and providing scope for a significant input to their organization.

The programme is intended to provide a valuable opportunity for the integration of LIS professionalism with management education and training. The involvement of senior LIS managers in its design has been essential, and their involvement will continue through teaching inputs and advisory work. Adding value in this way becomes a means of supporting middle and senior managers from within the LIS profession, whilst exploiting the expertise, contacts and wide management understanding of a business school to the full. Collaboration of this kind between SLIS and management specialists offers scope not only for advanced postgraduate courses, but also for wider research and development work. Building on the expertise of both should benefit the LIS sector, whilst at the same time enabling LIS professionals to impact on wider developments in management education.

Management education for the LIS professions has already progressed considerably over recent years. Initial professional education programmes now take more account of the needs of information service workers to be managers as well as information functionalists. Nevertheless, there remains scope for SLIS to develop the continuing education of library and information service managers. They have the track record in successful programme development and also the wider view of the professions' needs that is so necessary in today's rapidly evolving information culture.

Other education and training providers have a role to play, especially in the tailored short courses which are important for enhancing those skills already acquired by managers. However, the way forward must be that of adding considerably more value to the initial and post-qualification education of information professionals so that they are properly equipped for undertaking the varied management tasks implicit in every modern LIS.

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The information professional in Europe: perceptions and realities

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Abstract
The paper describes the experience of Carpenter Davies Associates in initiating and managing European library and information projects and draws conclusions about the role of the future information professional based on these. Suggested responses by the information professional to developments in information and communications technology and some long standing professional problems are offered. The independent existence of an information profession in future is then discussed and the nature of the training required and the mode of its delivery questioned.

The title of this paper perhaps suggests that I have undertaken some piece of exhaustive, continent-wide research into the subject. This is not quite the case. In fact, what I am going to say is fairly exploratory in nature and will certainly end up begging more questions than it answers.

In fact, the evidence I am using is rather fragmentary – in the sense that it is drawn from a number of largely unrelated projects; in another way, it is restricted in the sense that it covers activities of the 'information professional' mainly in so far as they are represented by public libraries and information services (with a smattering of academic library involvement); and in still another way is rather over extended in that the definition of Europe is very wide, including a possibly undue emphasis upon the radically different situation and developments in the countries of the former Soviet bloc in Central and Eastern Europe. On the other hand, this evidence has at least been gained recently, and most of it has been gained at the 'coal face', in countries such as the Netherlands, which can be characterized as a rich EU member state; Greece, a poor EU member state; and Romania, as the extreme example – a poor former Soviet bloc CEE country.

Despite these limitations and without pretending that these samples of experience can be seen as allegories for the information professional in this country, I am hopeful that some of the remarks I am about to make do have some applicability for any information professional.

In order to give a better idea of where I am coming from, it may be necessary briefly to give a little background about myself and to describe in outline the European projects from which the evidence for this paper is drawn.

My professional background is a mixture of library and information work and foreign countries. I was for 14 years a British Council staff specialist in libraries and information, lived and worked in Indonesia, Singapore and Egypt as well as making many overseas visits whilst in HQ posts. In 1990, with Julie Carpenter, I left the Council to venture into the private sector (a path indicated to be virtuous by Mrs Thatcher), forming *Carpenter Davies Associates (CDA)* to do consultancy, research and project management work in the international library and information sector. The scope of this activity has now been broadened somewhat by our incorporation within a slightly larger entity called *Education for Change* which most frequently works on international development agency funded education projects.

This has led us into undertaking 'sector study' work, and the preparation and implementation of projects intended to benefit libraries and information services across the CEE region, in South Africa and in countries such as Lao PDR, Iran, Armenia, Pakistan, Sierra Leone and elsewhere.

We also manage three projects funded by the European Commission, which are the main source of material for this paper. I would like to describe in outline each of these very disparate projects. What each of them has in common is that they were designed as an attempt to explore the possibilities of pushing forward in some way from the status quo.

The first two are funded under the DG XIII Telematics Applications Programme for Libraries. They are therefore applied research projects.

1. MOBILE

This is a three year project which began in January 1994. It aims to develop a prototype and to provide research evidence for the possibilities of using new information and communication technologies and promoting access to networks for remote rural communities using mobile library and information services. Three public library services, in the Borders Region of Scotland, Friesland (Netherlands) and Veria

(Greece) are partners. The project which began in January 1994, is now in the middle of Field Trials. Total funding for the project is about 500,000 ECU.

2. DECIDE

This began a year later in January 1995 and has a similar duration and funding value to MOBILE. Its purpose is to design a prototype Decision Support System which: can be used by decision makers in public and academic libraries; be used in conjunction with any integrated library system; draw upon data from in-house and external sources alike; and which has a user-friendly interface. The library partners are the University of Bristol, University of Alcala de Henares (Spain) and the Public Library of 's-Hertogenbosch (Netherlands). Two library systems suppliers – SLS (Information Systems) Ltd and Datapoint Nederland BV – are also partners. Following a longish user requirement definition phase, the system and interface are currently being developed, and it is expected that testing will be completed and field trials begun in September 1996.

3. PHARE Public Libraries Development Programme (PLDP)

This is funded by a different part of the European Commission, DG I, which is responsible for Europe's programme of assistance to CEE countries. PLDP is funded under the PHARE Partnership Programme, which is unusual in that it enables proposals to be generated from the European Union partners rather than only from within the country concerned. The partners are Essex County Libraries, which is the Lead Partner and with which CDA developed and manages the project, Nederlands Bibliothek and Lektuur Centrum (NBLC), and again the Public Library of Veria (Greece) on the EU side, whilst on the CEE side it is the County Libraries of Cluj (Romania) and Pest (Hungary). The aim of the project, which has a total funding of 300,000 ECU, is to define and develop model public library services in Cluj and Pest by going through a step-by-step process of user survey, staff skills audit, training programme design and implementation, service design and implementation and national dissemination and debate on public library policy – many of which are fairly new processes in the countries concerned. The main performance indicator is that Cluj and Pest public libraries will introduce at least three discernible new services, and the clear context is that these will involve some broadening of the previous 'cultural' (that is politically-controlled), book-lending centred model for public libraries in the region, toward the delivery of information services which assist the public to participate in 'social dialogue' with government, and to pursue their economic and social interests more easily and effectively.

The project began in November 1995. The Soros Foundation (Open Society Institute: Regional Libraries Programme) has granted a further $100,000 to extend this debate to 14 other countries in the region through a series of events, and a further application has now been submitted to the PHARE Partnership Programme to extend the PLDP itself in a phase 2 to public library authorities in four more countries: Czech Republic, Slovak Republic, Slovenia and Albania.

4. ISTAR networks proposal

The ISTAR networks proposal is currently nothing more than that. ISTAR stands for Information Society Training and Awareness Raising. It has been submitted under the European Programme for Inter-Regional Cooperation and Regional Economic Innovation run by DG XVI, in particular its call for proposals in connection with the Bangemann Report on Europe and the Global Information Society. It aims to provide a model for promoting awareness and extending network access to businesses, especially SMEs, individual teleworkers, open and distance learners in three 'peripheral' Objective 1 regions of the European Union in support of each region's key economic development drivers.

To achieve this, it plans to utilize the existing widespread infrastructure and resource base of Europe's public library network to establish centres and nodes which will make use of advanced Information and Communication Technologies to provide access to information, IT resources, network services and training for users. The public libraries will seek to develop active partnerships with other agencies operating in each region, followed by a Europe-wide programme of dissemination of results. Once again the Lead Partner is Essex County Libraries, working mainly in the role of resource provider – the other partners providing locations for the model sites are the Western Education and Library Board (Northern Ireland), the Prefectura of Imatheia in Central Macedonia (Greece) and Thuringia (Germany – in the former GDR). If the project starts it will be later this year – it will last for 2 years and has an estimated total cost around 2 million ECU.

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These brief descriptions of projects we have initiated may give some flavour of the directions in which we see a part of the information profession's needing to move. It should be stressed that this is work in progress and involves experimentation. There are obviously many other related projects and initiatives taking place at European and at national level.

The conclusions I am moving toward in this paper are necessarily tentative and I draw them not because I especially favour them or particularly want anything much to change. I was a librarian at birth and the existence of librarians comforts me: I also feel that a fair amount of the information management hype of the last two decades has been only very partially reflected in real life and practice. I say them because they seem to me to be the product of irresistible trends.

Many of these remarks are capable of much more complex and accurate expression than I will be able to provide here. But if asked to say in broad terms what responses the European information professional of the foreseeable future will need to offer and embrace, I would probably include the following.

End user access: go with the flow

Perhaps the key issue for the information management profession is the combination of factors – the proliferation of information production combined with emergence of the electronic networking infrastructures – which have led to the development of consensus on the desirability of strategies for supplying access to information as opposed to collecting it.

In this scenario, the main task of the information professional is to enable the end user one way or another to gain access to information, offering training and advice, perhaps by providing facilities or, where required, performing specific information handling tasks on behalf of the end user. 'Windows based Internet access via Netscape and email are the common denominators at present. These are not yet satisfactory document delivery mechanisms; however developments are rapid in these important areas'[1]. It seems certain that there will be a continuing shift toward end user access, toward the provision of more end user-friendly navigational instruments. A quandary for the information professional is the need to accept the risk that goes with this – that in embracing this role there is the potential that they will put themselves out of business in certain ways. However, it is extremely unlikely that this can be prevented by a defensive strategy on the part of the profession: such a strategy is also unlikely to persuade funders that it is capable of embracing new roles.

In a paper delivered at Online Information 95, Gloria Dinerman, said:

> 'As end-users become more proficient in researching their own answers, the librarian is transformed unto an information technician who propels that use toward the discovery of information resources. The librarian must serve as the specialist, the promoter, the interpreter, the disseminator, the trainer. Never before has the profession had such an explosive opportunity to lead other professionals into a dynamic world of search and discovery. Until the information explosion, the librarian functioned as a reactor to the requests of the users. Now a new persona is emerging that changes the behaviour from passive to active, and with that new leadership role librarians have the opportunity to exert more influence on management decisions. For years we have been striving to shed the image of benign compliance and now is the chance to show our leadership is there.'

So, information professionals need to accept and support the process of transition toward greater end user information access not fight against it. Attention is required to emerging areas of life where new support roles can be developed: for example, in work through the spread of teleworking; and in education through open and distance learning. The ready acceptance of this by the partners in the ISTAR Networks proposal appeared to us to be greatly encouraging.

Be a Web Master

In some ways it is rather trite to go on about IT literacy when so many information professionals in Europe have recognized this for so long and have striven to develop IT knowledge and skills. It is however far from clear that all parts of the information professions are competitively skilled in this respect. As a straw in the wind, a survey of 100 leading academic and public library service managers across the European Union, with a previous track record in decision support or related areas, showed that 60% considered themselves to be infrequent or non-users of a spreadsheet.

Clearly network use skills are a key indicator. Most academic and many public library and information units across the EU are now connected to the Internet. It seems basic that information professions will need to know about and be able to navigate networks, until they become so user-friendly and well signposted or so simple to navigate instinctively that professional intermediaries are no longer required. Adaptability to change is the absolute keynote here – in the MOBILE project, library staff used mainly to stamping books now need to offer Internet access and understand mobile communications technologies.

The presence or otherwise of ICT infrastructure is clearly a very strong determinant of the type of opportunities in which information intermediaries are able to be productive. For example in countries of South Europe such as Greece and certainly CEE countries, neither connectivity, local language information production, nor information seeking habits are present to anything like the same extent as in the North West of Europe. Paradoxically this means that public libraries in Romania, for example, have something of an opportunity, with remarkably few competitor organizations at national or local level, to establish an important role in the provision of access to information for a public which is bewildered about welfare entitlements, democratic rights, non-government services, how to start and run business activity, how to trade with Europe etc. As part of PLDP, the staff of the public library of Cluj has begun to discuss with local government and other agencies a possible role for itself in promoting, dispensing and authoring information in partnership. The response has been very positive indeed – almost certainly more so than that which would be easily generated by any such dialogue in this country. This high level of need for an intermediary role, could be seen partly as a consequence of infrastructural underdevelopment in this context.

Become one with the users

The acts of collecting, storing, describing, manipulating or providing routes of access to information are fairly pointless without clients, customers or users. It is the potential for use that generates the need for information to be managed. The effort to do this is only validated by use and the need for professional handling only likely to be required if it can be seen that the intervention which is being provided is what users want. In CEE countries, the conditions of the past have not contributed to this way of thinking. Academic librarians in many cases do not think of libraries as an educational resource. One of the problems facing the public library of Cluj is that only 7% of its catchment population is a member. Clearly one way or another it is failing to deliver what users want. The consequence is that it is very low in the pecking order for city council expenditure or investment. In its case, a user survey is only a first step on a difficult road, in which experimentation also has an important role to play. Information professionals have for some time needed, and will increasingly need, to see themselves as part of a community or organization without which their role would not exist. This too implies increasing adaptability to change. The DSS for libraries being developed in the DECIDE project, for instance, is likely very soon to be superseded by a need for a DSS which relates to information and learning materials provision structures in academic institutions at a higher overarching level than that offered by libraries, as the process of change under which more end users obtain documents electronically for themselves.

The information professional needs to identify exactly which community they are serving and to adapt their model and position themselves within their organization as necessary. Failure to do this will tend to lead to marginalisation. I was interested to see that later in the programme, one paper at least will cover the idea that information handling is or will be a core skill for everyone. If this were the case, the logic is that the concept of information work as a professional category would become less meaningful, links between professional peers might become less significant, and information professionals would converge with users groups. Until then, customer satisfaction is likely to remain the main goal of the information professional. The strongest defence for any kind of information service is a demonstration that the users want it. Happily there is plenty of evidence that this is recognized across Europe. Within the DECIDE user survey, Performance Indicators from five major international studies were ranked according to the priorities of academic and public librarians according to categories developed by the PROLIB/PI study commissioned by DG XIII of the European Commission. Performance indicators for customer satisfaction came top of the list.

Worry about money – and get a financial strategy

Providing information of whatever kind costs money which has to be found from somewhere. Librarians and information people have perhaps tended traditionally to hide behind arguments which support the idea that what they offer is 'good in itself' and hope that this can be financed. Waiting for improved blanket public sector finance in most prevailing conditions in Europe looks likely to lead to stagnation and possibly to death warrant signature.

Consistently expressed (if not delivered) lower tax policies in much of the European Union and the very low level of public revenues in CEE countries suggest that it may be wise for any service provider not to rely on general subsidies for 'good things' from tax by central and local government or probably from any kind of organization. The trend is inexorably toward the real user paying or toward contracted payments for specified services for specific purposes. Client or customer will pay a higher proportion of the cost directly.

Information professionals need to embrace the financial and economic aspects of their task with a good heart, not grudgingly as though it were against their principles – it's probably safer and more secure in the long run. A successful and well worked financial strategy often goes hand in hand with other manifestations of success. The public library of 's-Hertogenbosch in the Netherlands, raises over 30% of its budget through income from sales, loan fees, subscription charges, and actively debates funding formulae with its local council. The tills are ringing, the library resembles a shop in many ways, it is heavily used and advanced in IT. At the other end of the scale, many librarians at higher education institutions in the Czech Republic (which are autonomous these days) were unable to respond to a question in an EC study in which I was involved which asked them for the total salary costs of the libraries in their institution. They did not consider this type of information to be part of their area of responsibility. It is difficult to envisage that they would be empowered in other ways as information service managers.

Go into partnership

Information providers should either proceed in well structured cooperation with or in competition with other information providers. The worst thing is to ignore their existence and try to proceed in parallel: this reduces the user base for all and weakens resources.

The ISTAR project proposal is based on the premise that public libraries will enter into partnership with other local institutions. Experience in PLDP also suggests the strong potential for increased profile and perceptions of value through entering into strategic partnerships.

Many librarians complain that there is insufficient time to carry out core tasks let alone do fancy things like enter into European project partnerships. However, not everyone can. The public library of Veria in Greece which has a tiny staff participates in two, now possibly three, European projects. Overall, experience suggests that entering into partnerships at European and local level tends to act as a magnet for resources and to enable expansion into new areas of information activity.

Don't worry about culture

It was noted in the proceedings of a recent seminar on education and training in CEE countries that 'the cultural function of the library is not fully compatible with the information function'[2] and there remains this tendency to twin tracking of these two concepts in the former Soviet countries. Across the CEE region, research has tended to show that interest in reading is decreasing and this has led to concern about the development of a 'monoculture' in which economic issues are the only ones of public concern. The department of the Romanian Ministry of Culture under which public libraries fall can be roughly translated 'the Department for the Defence of the Printed Word' (not a million miles from, but perhaps only a subset of, 'National Heritage'). The concept is still pervasive in the perceptions of many librarians schooled under the previous system. In this context, the residual concept of culture, shorn of its ideological content, could in fact be boiled down to – 'providing access to fiction, literary criticism and music in Romanian'. In many ways it can now be seen as nearly the antithesis of providing users with the information, recreational facilities or intellectual stimulation they want, as levels of use tend to indicate.

There may be such a thing as society – but some may wonder whether there is any such thing as culture, other than as a description of the way people or societies behave. In any case, we can fairly confidently expect that the pattern of consumption of 'cultural' goods – and the way they are delivered to individuals and the home – will continue to change with the effectiveness, immediacy and high information content of the visual image continuing to gain ground over the printed word, to form a different balance of recreational, educational and information consumption within our culture.

In the main, there are strong indications of a likely general reduction of importance in the work of the librarian and information professional as 'cultural guardian'. This work seems likely to become increasingly technical and carried out by a few specialists.

It is interesting to speculate as to how far this can be linked to a possible demise in importance of the traditional tool of librarians – secondary information or bibliography. Clearly – and especially in electronic formats – this type of information can be seen as an integral part in the development of 'seamless' access to primary documentation and a part of the future.

Jibes against cataloguers come fairly cheap but in CEE and other parts of Europe, the biggest burden to be faced is dealing with what can only be called the baggage of the bibliographic legacy involving an almost insatiable attraction to automated retrospective cataloguing, often involving extravagant duplication and waste of scarce resources and exacerbated because of the inadequacy, poor management or non-existence of national language bibliographic utilities.

I await the advent of new 'meta languages' and protocols for accessing documents themselves over networks with baited breath, perhaps partly because it seems important for the image of the information professional to extract themselves from the embarrassment of anything to do with cataloguing. This may be a personal prejudice. Clearly, as can be seen from the raft of document delivery projects funded by DG XIII, European librarians and information professionals themselves have a role in bringing this about.

I think the LIS professions need to deal with this issue as sharply and efficiently as possible, drawing upon commercial expertise and involving a limited number of information specialists. The tendency to become trapped in the mire over issues such as MARC standards and the like, works heavily against the status of the professionals. It is rather more attractive to think of our professionals as mainly being concerned with understanding the nature of user demand and working toward effective approaches for the synthesis, interpretation, packaging and delivery of primary information. In this capacity, the information professional could increasingly be seen as author, editor and publisher of information, implying convergence and in some cases an exchange of roles with current publishers. This debate is of course already present within the academic community in the context of electronic publishing of academic journals etc. It is also interesting for pubic library and information workers in CEE countries, where there are so few competitors in information publishing.

Status has to be earned

Across Europe and globally, hard lessons about demonstrating value have to be absorbed by information professionals if they are to improve status, recognition and earning power. The extreme examples of the phenomenon of low status and pay for some categories of information worker are once again to be found in CEE countries. Recently, Romanian 'cultural workers' had their pay lifted by 30% (from an average of about $50 a month), but public librarians were excluded from the award. Their response was a two hour strike followed by a Japanese strike (wearing armbands) against this unfair treatment.

They have a case, but their argument is sadly circular and part of the public sector finance trap for libraries: until anyone working in an information or any other job can demonstrate their economic and/or other key value to clients, funders and users, they will not be able to claim higher status or pay. Such a profession will continue to find it difficult to attract high educational achievers.

Get the right training

It goes without saying that the information professional of the foreseeable future will need training in network skills in order to be confident in transferring those skills to users. Perhaps this paper has suggested some other training areas of general applicability. For example, the skills audits carried out as part of PLDP in Cluj and Pest demonstrated recognition of the value of leadership but not of commonplace managerial concepts in other parts of Europe such as maximizing resources through efficient delegation.

In the CEE region, schools of LIS are relatively small, have little influence and receive little attention. They offer mostly traditional courses, but try to give some attention to new technology and new national needs. There is awareness that professional thinking and practice has not kept pace with the West, for example in community information, services to disadvantaged groups and for schools. There is a tendency for research in LIS schools to appear to be unworldly, not related to solving current problems or curricular development. In most EU countries, the situation is somewhat better. There is an attempt to address management issues, patterns of amalgamation and convergence with other disciplines have emerged etc. Even so, the overall impression is that change may be too slow to keep pace with changes in the information environment.

Everywhere, recruitment and motivation of students is at the low end of the spectrum because salaries and status are poor. To illustrate the consequence of this by a further extreme example, it was suggested to me recently that the librarian at Veria is considered by many to be one of only two effective and forward looking public librarians in Greece. Once again Romania (where there was no LIS training course for many years until 1988) provides an interesting laboratory. Since restarting such training, the pattern of recruitment is that graduates with skills in new technologies and languages take jobs outside library and information work, whilst many library and information service managers firmly hold that they get a better fit for their requirements by employing surplus graduates from disciplines such as engineering. The main perceived problem is seen by some as defining the content of education and the need to define the functions of the information worker: is it one profession or does it in fact already consist of so many narrow specializations as not to form a cohesive whole? Will the point at which end-user access to information becomes very pervasive and at which the information handling is seen as a core task be the point at which pre-service professional education becomes irrelevant? Is information, like management, a form of training which will form a part of most work, mostly carried out in work, perhaps leading to some competence based qualification set?

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Ewan Sutherland

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CONSUMER HEALTH INFORMATION IN THE YEAR 2000

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Aslib Proceedings, vol.48, no.10, October 1996. pp.221-252

Editorial

This issue has an interesting variety of papers, at least one of which calls in question the very vehicle in which it is published – a neat trick for an author to pull off.

Ewan Sutherland's paper on learning in cyberspace (*Global virtual graduate schools*) contains a comment in the section on electronic journals (page 227) to the effect that 'when the constraints of paper are lifted there is no longer a need for a fixed number of issues of fixed length.' The comment immediately following that contains the sting: 'Instead quality and immediate publication can be achieved.'

If quality of content is linked to immediacy of publication (i.e. the faster it is published the better it is) then many readers might care to take issue with that idea. Of course there could be an inverse relationship: the shorter the publication time, the lower the quality of the content. Let me hasten to say that this is not a reflection on the paper in question, since Ewan goes on to point out that Web-based electronic journal papers can accumulate reader's comments and views, and can 'capture interaction on the pages of the journal, through responses and questions.' This should be taken together with his idea of 'open' peer reviewing where candidate material is offered on the Web, and it is the comments of readers that constitute the peer review. The result may be papers which are not only of higher quality as a result of interactive exposure to the readership; but also much richer than conventional publishing since the comments will be drawn from a wider range a viewpoints, and will be cumulative in a way that readers' letters in a paper journal can never be. Indeed Ewan's suggestion is that the completed paper is actually the original *plus* all the comments.

As someone about to embark on a post-graduate course, I look forward to seeing whether his predictions from the latter part of the paper are borne out in fact.

Also in this issue we have a review of library facilities in the polytechnics of Ghana. In many ways the situation described is similar to that which a number of UK academic institutions appear to be approaching: the difference is that the Ghanaian institutions are aspiring to improve to levels to which the UK equivalents seem to be declining.

The two papers mentioned above bring us neatly to the final two which result from the *The Future Information Professional* conference. With two apparent extremes of information provision, where does the professional operate?

Peter Gillman
Editor

Global virtual graduate schools: learning in cyberspace

Ewan Sutherland
University of Wales, Lampeter, SA48 7ED.

Abstract

The paper first reviews the evolution of the ideas about the strategic management of information technology and how these ideas are seen today. Secondly, an examination is made of the explosive growth of the Internet and of the World Wide Web, both in terms of the profusion of new technologies and in the increasing access to the Internet from homes and offices. The development of electronic exhibitions, forums and journals is then discussed, together with ideas of virtual and digital libraries and the implications these have for teaching. A personal narrative is provided showing the evolution of the author's use of the Internet for teaching. The possibilities and problems of developing virtual schools are then discussed, both for the global virtual business school and the global virtual library school. Finally, conclusions are drawn, some key issues identified and some warnings issued.

Introduction

A combination of economic and social forces and technological opportunities is making possible a new model for graduate schools. The virtual graduate school will soon be feasible and this paper explores the issues this raises and the possibilities it affords. One possibility is a single global virtual library school. The enormous scale of undergraduate teaching forces consideration of alternative solutions even as far as global franchising for better known 'brandnames'.

Business strategy and information technology

For something like fifteen years leading organisations have been grappling with the idea that information technology might offer some sort of competitive advantage. The current state of knowledge is that information technology does not provide sustainable competitive advantage; only smart people can do that. However, the use of technology does create opportunities which may disadvantage rivals in the short term. In many cases such technologies quickly became a strategic necessity, without which it is impossible to be in the industry. One clear message is the value of a blocking coalition, where two or more companies combine their efforts and information from different sectors to obtain a strategic advantage over rivals, for example by combining American Airlines with Citibank to offer a credit card which offers frequent flyer advantages.[1]

The best model currently available was developed by a group of academics and practitioners at MIT who found it useful to distinguish between internal and external factors and to separate business and information technology issues, the interactions between these were then tuned iteratively to achieve 'alignment'[2]. The external factors are the positioning of the organization in the IT market and of its IS function as a purchaser of products and services in the global IT marketplace. The internal factors include organizational structure, culture and so on, together with the infrastructure and processes run by the IS function. An important distinction from previous models is that the process of policy formulation is seen as a loop and not as linear – strategy is not handed down on tablets of stone to the IS managers; they are involved in the process of strategy formulation. This general approach was powerfully reinforced by Mintzberg[3] who delivered a devastating critique of formal strategic planning. A second distinction is the implicit inclusion of organizational factors in the loop – too often these have been ignored – yet they are essential in order to exploit the potential of the technology. It is suggested that by starting at the business strategy and going twice round the loop, aligning all the factors, it is possible to close on an integrated set of policies. The remaining difficulty, even with this model, is that it provides little help in analyzing how the decision to use or not to use an information system will affect the competitive performance of a company.

A crucial change in the mid-1990s has been the opportunities in electronic commerce arising from the widespread adoption and rapid technological evolution of the Internet. This presents important business opportunities which strategists must take into account. While the medium and long term benefits are unknown it is vital to be there, learning about what is and what is not happening.

The explosive growth of the Internet

Even for those closely associated with the Internet, its growth in recent years has been remarkable, both in acceptance by individuals and in technological advances. Attempts by companies to go against this trend have failed, even Microsoft has been obliged to bend to, if not wholly to conform to, the Internet.

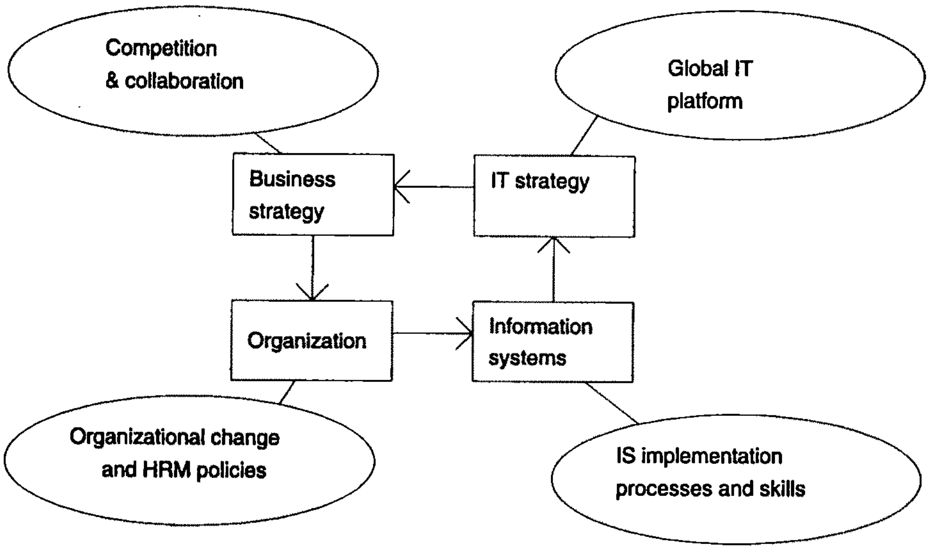

Figure 1. Strategic alignment process [*Source: K. Hugh Macdonald*]

There have been remarkable advances in the development and use of:

- electronic mail
- Internet Relay Chat (IRC)
- Multi-User Dungeons or Dimensions (MUDs) and object oriented MOOs
- World Wide Web (WWW)
- CU-See Me, VDO and multicasting

Software companies have adopted the "drug dealer's stratagem" of giving away free samples in order to develop a large customer base. In this way products such as Doom and Netscape Navigator have become commonplace. The results can be substantial financial rewards, sometimes 'lottery money'.

The Netscape Navigator product was launched in late 1994 free of charge, while the shares were launched in the fall of 1995 with the Initial Public Offering (IPO) priced at US$ 28. Trading the first day jumped to US$ 72 and peaked some weeks later at US$ 166, but then fell back to values in the mid-fifties. The peak value of the company was some six billion dollars, which is remarkable for a company whose total profits are a few millions. This was followed in March 1996 by the initial public offering of Yahoo, one of the search engines with a hierarchical menu guide to the Web. This quicky flew into the financial stratosphere with a peak value of US$ 1,100 millions, later falling to around US$ 700 millions, which is almost farcical against total sales to date of only US$ 3 millions and almost no operating profits. The limited availability of Internet stocks goes some way to explain the enthusiasm, but it also betrays a stark ignorance of the technologies and the markets in which these companies operate.

Hypertext on the Internet

Ideas concerning standalone and networked hypertext date back many years. Much of what is now being implemented in the World Wide Web dates back to the work of Doug Engelbart in the 1960s. For reasons which are both technological and organizational, there were long delays in the creation of a mass market for hypertext. One of the key 'inventions' was the Uniform Resource Locator (URL), which allows items on the Internet to be uniquely identified. Tim Berners-Lee, the originator of the Web, never intended the URL to be written down or to be used in a human-readable form; it was to be hidden inside links in hyper-documents. He had assumed, wrongly as it proved, that people would find pages and URLs by browsing rather than from course hand-outs, business cards, television advertisements and newspapers. His original software had been written in a user-friendly graphical user interface, NeXTstep, the operating system for Steve Jobs' ill-fated NeXT workstation. Hypertext Mark-up Language (HTML) was to be like PostScript, not edited using EMACS or vi but generated by programs never touched by human hand. Home pages were not intended as advertisements, but as a list of places which the owner needed to keep as a convenient record.

We are now achieving this with improved WYSIWYG editors such as:

- Netscape Navigator Gold
- GNNpress
- Microsoft-Vermeer Front Page

One of the most remarkable advances has been the appearance of search engines to help us find material on the Web by constructing indexes. The largest of these has over two billion words indexed from twenty million pages. Engines include:

- Alta Vista (http://www.altavista.digital.com)
- Yahoo (http://www.yahoo.com)
- Lycos (http://www.lycos.com)
- Infoseek (http://www.infoseek.com)
- ILSE, a Dutch index (http://www.il.ft.hse.nl/ilse)

Some search engines are now funded with advertising revenues, with Infoseek customising adverts to your search, so that a search related to motorbikes, for example, will be given an advert for Harley-Davidson, linking to their home page. The engines make it possible to find the best material in the world with relative ease. Although search engines do not always yield simple and tidy results, a little practice and some persistence can reveal the best, though this presupposes an ability to distinguish the good from the bad. Work is underway to develop improved search algorithms including 'knowbots' based on the use of neural nets. There is a severe danger that the process does not close, that the searcher becomes engrossed in other pages, constantly stimulated and diverted from the task in hand. One additional problem is that it may not be obvious whether the material found is genuine.

Web-browsers support a multiplicity of fileformats, which grows daily through improvements to browsers and plug-in software. Typically, these include:

- HTML
- plain text
- still pictures (GIF, JPEG, TIFF, etc)
- image maps
- moving pictures (QuickTime, MPEG and AVI)
- sounds (WAV, AU, etc)

One important advance in 1995 was software allowing Kodak Photo-CD images to be put on the World Wide Web. This allows very much higher levels of resolution, up to 6144 x 4096. At present this feature is available only on Java-enabled browsers; thus for Windows it is available on Mosaic 2.1 Beta. An important application of this is in cultural sites. Kodak has demonstrated the concept with George Eastman's House, National Air and Space Museum in Washington, DC, USA (http://www.it.rit.edu/~gehouse/gehPcdTour.html).

HTML can also contain links to programs, including:

- Common Gateway Interface (CGI) to:
  - forms
  - C and C++ programs
  - PERL programs
- Hot Java and Javascript

One of the consequences of this growing complexity is that there has been a growth in demand for 'web-weavers', companies created to meet the demand for programming and design skills. Examples include:

- Original (http://www.original.com)
- Obsolete (http://www.obsolete.com)
- Net Response (http://www.netresponse.com)
- Web Media (http://webmedia.mpn.com)

The days of the lone builder of a web page are limited – the state-of-the-art requires a supporting team of programmers and designers.

At a much more experimental stage is the use of Virtual Reality Modeling Language (VRML) which allows the creation of 3-D environments. Current examples include British Telecommunications Laboratories (http://virtualbusiness.labs.bt.com/vrml/portal/home/) and the campus of the University of Essex (http://esewww.essex.ac.uk/campus-model.html), which can be browsed and in which buildings are linked to the home pages of the departments inside them.

While the capacity and routing on the Internet makes response time for real-time audio and video problematic, experiments are under way with both. Oracle is making great play of the market potential of servers delivering audio and video. Software from Real Audio has been used by the ABC network to 'broadcast' news on demand onto the Internet to individual clients. The software has also been used for concerts. The multicasting of video is more problematic, especially if some sort of synchronisation is to be achieved between sound and image. Conferences such as World Wide Web 4 from Boston and WWW5 from Paris were multicast onto the Internet and some people were able to view them successfully. On a much less grand scale there has been some use of CU-See Me, with a comparatively cheap US$ 120 Connectix camera. Currently this is a black and white technology, but experiments are under way with a colour version and higher levels of resolution.

Given the technical performance of the Internet, some things are better on CD-ROM (600 Megabytes) and the new DVD (1,400 Megabytes) formats. For example, Irwin already sells a three CD-ROM set covering the basic MBA syllabus for around US$ 120. Where the material is relatively stable in content and can usefully be studied in isolation, CD-ROM presents considerable attractions, not the least being consistent performance and widespread availability of CD-ROM drives. Thus material such as a class on Hamlet or an introductory course on Keynesian economics would be well suited to CD-ROM. Historically the cost of producing television material and of access to network transmission capacity were both very high. The cost of cameras and electronic editing facilities has fallen dramatically, while the growth of cable television and the recent launching of satellites capable of broadcasting five hundred channels of television have removed these barriers.

The Web suits material which is:

- rapidly changing
- benefits from interaction with other students and tutors
- is very broad

To succeed, the Internet needs to be used to create interaction of a standard equivalent to a classroom or better.

Social interaction

The basic means of communication on the Internet have been electronic mail and talk, the former being store and forward, the latter allowing immediate person-to-person communication. The volume of traffic of both grows daily. The success of dial-up bulletin board services (BBSs) encouraged the developmet of systems such as Internet Relay Chat (IRC). Originally designed for use by a handful of people it just grew and grew, the originators making no money from it. Poor as its performance often is, with lag and servers which are unreliable and inaccessible, IRC is used twenty-four hours a day all around the world by thousands of people. It has a certain reputation of seediness arising from some of the sex channels. MUDs and MOOs are described as text-based virtual reality, though this is a little anachronistic[4, 5]. Taking the idea of IRC and MUDs much further is Worlds Inc (http://www.worlds.net), which distributes copies of two systems called AlphaWorld and WorldsChat. These allow users to select avatars – their physical appearance – as they enter cyberspace and to talk to people as they move around the two worlds, one relatively simple and confined, the other a much more complex space in which people can construct buildings and gardens. IBM and Worlds.Net produced a system in 1995 which allowed customers to explore a virtual library and customer centre, linked to pages on the World Wide Web.

One area where evidence of the social use of the Internet is evident is in the gay community. The Internet and the Web are used by individuals to explore their sexuality in relative safety; cyberspace is generally very friendly. In IRC it is possible to take on an identity of your choice, not necessarily entirely truthful or realistic. The number of gay channels on IRC has grown substantialy since IRC began and contnues to grow. There are now channels for most countries and for many larger cities (e.g., #gay.NL and #gayDC). Some IRC channels have supporting Web pages, complete with photographs of the regular participants (e.g., #gblf.de at http://nike.rz.uni-konstanz.de/gblf.de/and #uk-poofs at http://uk-poofs.quipu.com/). There are also general information pages, on topics from safer sex to clothing. This self-exploration extends to many other aspects of sexual identity, such as bisexuality and transvestism.

Another group which makes extensive use of IRC is the dispersed student population of Malaysia. After leaving school, students scatter to the UK, USA and Australia in addition to Malaysian universites making conventional communication difficult. Twenty-four hours a day Malaysian channels operate on IRC allowing people to keep in touch. Similar channels can be found for other Asian countries, such as Thailand and Indonesia.

The Web is only beginning to acquire the characteristics of these social systems. At present someone viewing a page on the Web has little idea who else might have been or is currently viewing that page or what their opinions about it might be. Systems such as WebChat, HyperNews and TCBworks have the task of capturing views and opinions. HTML can also be linked to applications such as CU-See Me, VRML and telnet connections to text-based MOOs.

One of the stranger new phenomena is that of the cybercafé. The mix of Netscape and Cappuccino is far from obvious, not least because of the damage which hot water does to computers and especially to keyboards. Nonetheless, cybercafés have been opened in very many countries, for example, Cyberia in London and the Cybernet Café in Melbourne. Some of these can be dismissed as gimmicks or as attempts to add a few customers at off-peak times. Others are linked to businesses selling computers, software and training. The Cafe@Boatquay in Singapore is a particularly impressive example with personal computers, Macintoshes and Unix workstations to cater for its heterodox clients, a Web camera to allow cyber-visitors to see the café and more importantly businesses selling Internet access and presence (http://www.pacific.net.sg/cafe).

Virtual rather than real

For many years, computer system, have had features which were 'virtual' rather than real, this is now being extended into a broader range of service offerings, including journals, exhibitions, libraries and offices.

The virtual office is being constructed electronically and constitutes an important new organizational form. In such systems, teams can be created through computer network systems, rather than requiring a rearrangement of offices. Hundreds of thousands of workers located not in head office, but in small branches and on the road are now being linked through the use of mobile telephones and data communications.

Electronic journals

Experiments have been conducted to see if an alternative to paper journals can be built using electronic systems. Some of the very wide range of current journals include:

- *Journal of Computer Mediated Communication* (http://www.usc.edu/dept/annenberg/journal.html)
- *Electronic Journal of IT in Construction* (http://itcon.fagg.uni-lj.si/~itcon/)
- *Electronic Journal of Pathology and Histology* (http://ampat.amu.edu.pl/czasopis/ejpathol.htm)
- *Hypermedia Joyce Studies* (http://astro.temple.edu/~callahan/hjs/hjs.html)
- *Anthropoetics: The Electronic Journal of Generative Anthropology* (http://www.humnet.ucla.edu/humnet/anthropoetics/home.html)
- *International Journal of Media and Communication Studies* (http://www.aber.ac.uk/~jmcswww)

The electronic journal raises many questions. When the constraints of paper are lifted there is no longer a need for a fixed number of issues of fixed length. Instead quality and immediate publication can be achieved. If these are Web-based it is crucial to have regular additions so that returning browsers find something new of interest. One area where this is easy is the possibility of capturing interaction on the pages of the journal, through responses and questions. It is possible to achieve real debate. A more extreme position would be to move to open peer reviewing, with 'candidate' articles appearing on the Web and being commented upon and revised until they become fully accepted articles. Abstracting is automatic as the search engines find articles and index them. Used judiciously, a much closer community of scholars will be created.

Digital libraries

In the past libraries were real, they had to be if they were to be of any value, though there was considerable collaboration and sharing of resources. Today considerable efforts are being made to create digital libraries. By and large these duplicate the traditional library in electronic form. In addition to the UK initiatives under the Follett and E-Lib brand names, there are five large projects in the USA:

Carnegie Mellon University ($4.8 million)

The Informedia system is to be created by Carnegie Mellon University and WQED/Pittsburgh to enable access, exploration and retrieval of science and mathematics materials from video archives. It will work by integrating speech, image and natural language understanding technologies. Issues involving human-computer interaction, pricing and charging for digital video use, and privacy and security will be addressed. Industrial partners include Microsoft Corporation, Digital Equipment Corporation, Bell Atlantic Network Services, Open University, Winchester Thurston School and Fairfax County Public Schools.

University of California, Berkeley ($4 million)

This is a prototype digital library for diverse environmental information, for the preparation and evaluation of environmental data, impact reports and related materials. It is intended for eventual full-scale deployment in the State of California's CERES production systems. The prototype will allow untrained users to contribute to and find information in other world-wide digital library systems. Research areas include automated indexing, intelligent retrieval and search processes; database technology to support digital library applications; new approaches to document analysis; and data compression and communication tools for remote browsing. Commercial partners include Xerox Corporation, Resources Agency of California, California State Library, Sonoma County Library, San Digo Association of Governments, The Plumas Corporation, Shasta County Office of Education and Hewlett Packard.

University of Michigan ($4 million)

This project is to create, operate, use and evaluate a large-scale, evolving multimedia library, primarily earth and space sciences. Connecting thousands of users and information repositories, the library system will be designed to systematize the vast amount of information available on the Internet. The project will test and evaluate use by a wide variety of users, including those from on-campus, local high schools and public libraries. Commercial sponsors include IBM, Elsevier Science, Apple Computer, Bellcore, UMI International, McGraw-Hill, Encyclopaedia Britannica and Kodak.

University of California: Santa Barbara ($4 million)

Project Alexandria will develop a digital library providing access to large and diverse collections of maps, images and pictorial materials as well as a full range of new electronic library services. The project will also involve the State University of New York at Buffalo (SUNY-Buffalo), the University of Maine and several industrial partners. It will begin with collections of digitized maps, images and aerial photos relating to Santa Barbara, Ventura and Los Angeles Counties. Later it will include material from other sources including the Library of Congress and the United States Geological Survey.

Stanford University ($3.6 million)

The Stanford Integrated Digital Library Project will develop the enabling technologies for a single, integrated virtual library to provide uniform access to the large number of emerging networked information sources and collections – both online versions of pre-existing works and new works. It will be a shared environment linking personal information collections, conventional libraries and large data collections shared by scientists. The research will include: information sharing and communication models; client information interfaces; and information finding services. Participating organizations include: Dialog Information Services, Hewlett-Packard Labs, NASA Ames Research Center, ACM, Interconnect Technologies Corp, Enterprise Integration Technologies, Bellcore, Interval, O'Reilly, WAIS Inc. and Xerox Corporation.

University of Illinois ($4 million)

This project is based on the Grainger Engineering Library Information Center at the University of Illinois in Urbana-Champaign and will focus on journals and magazines in the engineering and science literature. The testbed will include a customized version of NCSA Mosaic. This will become a production facility with thousands of documents and a large number of users across the University of Illinois and other universities. Research will encompass sociological evaluation, technological development of semantic retrieval, and prototype design of future scalable information systems. Partners in the project include University of Arizona, Corporation for National Research Initiatives, IEEE, American Institute of Aeronautics and Astronautics, American Physical Society, Institute of Physics, John Wiley & Sons, and US. News & World Report. Industrial partners include: United Technologies, Softquad, BRS/Dataware and Spyglass.

Going beyond the idea of the digital library is the virtual exhibition, of which the most famous is the Web Louvre by Nicolas Pioch now 'mirrored' at sites all round the globe. The 1996 International Internet Exposition (http://www.park.org), includes a feature by which the central server identifies our location on the Internet and moves your requests to a nearby server. Interact96 was a conference and exhibition held on the Internet from 23 to 25 April 1996 using Web pages, with VRML, multicasting using VDO and discussion rooms (http://www.interact96.com). Sadly, its physcial location on the US eastern seaboard meant that it was largely invisible to potential participants in Europe.

At the ITU's massive Telecom '95, the conferences and exhibitions were held in the usual way, at Palexpo in Geneva. However, many companies were giving away not leaflets but CD-ROMs with company information. Others had arranged material on the World Wide Web. Will there be the same need for a 'real' exhibition in 1999?

Using the Web for teaching: a personal narrative

I confess to being an enthusiastic user of the Internet and before it of JANET and SERCNET. My first computer work was run on punched cards in the 1970s, a world now relegated to historical museums. While I have used electronic mail for many years, I have encountered some difficulty, until recently, in using the Internet for successful teaching. I was able to supervise a master's dissertation by electronic mail, that was all that was available, for a student at a Danish University. The Web changed that, students now share some of my enthusiasm, if not always the direction.

The information society

Following changes to the undergraduate programme at the University of Wales, Lampeter, I had a relatively clean slate on which to design a new level one module. The result was a broad-based module for students in arts and humanities covering many facets of the information society. This was first taught in spring 1994 and again in 1995; the 1996 version was taught by a colleague while I was on study leave.

In the first year, a video projector driven by a personal computer was used in preference to an overhead projector and acetates. It was relatively easy to allow students access to copies of the Microsoft Powerpoint files and printable versions in PostScript on a central VAX/VMS system. In the second year students initially had access to Lynx, a text-only browser, and later to Mosaic and Netscape Navigator. As an experiment, material was made available on the World Wide Web (http://www.lamp.ac.uk/~ewan/InfSoc). This included:

- aims and objectives
- course description
- seminar notes
- lecture notes
- specimen examination paper
- links to relevant material on the Web
- a 'what's new' section of general interest

The intention for 1997 is that more resources will be available in electronic form and that the 1998 version will be run with almost no paper going from teachers to students.

The use of the World Wide Web at Lampeter has advanced remarkably over the last eighteen months. From a peripheral and relatively inconsequential activity, use of the Web has become much important in terms of teaching and also in marketing and recruitment. Staff, both academic and administrative, now make regular use to the extent that interruption to service is no longer acceptable. The undergraduates seemed happy enough with the availability of material on the Web. At times they seemed indiscriminate in pursuing links and searching the Web. The problem is of how to help people to control their use.

Georgetown School of Business

Given the publicity and the coverage of the World Wide Web in the newspapers and television, the MBA Class of '96 students were in general favourably disposed to its use in teaching. They recognised its potential value and the need to experiment. However, students were quite conservative in their ways, often in marked contrast to their private use of the Web which could be quite cavalier and indiscriminate, though severely constrained by pressures on their time.

Students at Georgetown School of Business operated in a largely paper-based environment in terms of books, course-packs and so on, though electronic mail was in everyday use. When presented with electronic documents, many simply printed out material, in order to take it away to read and to annotate. Having carefully broken the text into chunks for on-screen viewing and to facilitate hyperlinks, it now had to be reassembled for easy printing. Despite coming from a younger age group who might have been thought more flexible, they were keen to stick to paper. For technical reasons some students found it easier to use a mirror site in the UK rather than the Georgetown Web server. In some instances students were unhappy about the limitations of access from student laboratories, which reflected on the inadequacy of the provision and not on the Web or the Net.

A factor which emerged was that students did not like the profusion of material. In many instances they wanted to know what the professor wanted them to read; that someone else had determined the parameters, though they might well exercise discretion within those.

There remain real problems of taking these Web-based cases into the classroom. Ironically it is often easier to access such systems from the workplace and the home, though not yet as conveniently as paper. Few computer laboratories lend themselves to the discussion of case studies, though work has begun on teaching theatres in some universities.[6]

There is no real answer to the request from students for a highlighter pen for the Web-based cases. Nor does HTML give adequate support for footnotes; there is still a need for a simple way to bring short explanations to the screen.

Global virtual graduate schools

The environment for graduates has changed quite dramatically in recent years. It is no longer enough to talk about continuing professional development nor to stuff masters courses in the hope that one day students will be able to recall the material years hence when they need it. Faced with a changing environment, graduates need regular up-dating and development courses throughout their careers. The implication of this is a shift from a one-off relationship, for an intense year or two, to a long-term relationship best termed 'life-long strategic learning partnership'. Just-in-case teaching can be dropped in favour of just-in-time learning. The follwoing sections address two specific types of graduate schools, business schools and library schools.

The vision of the university as gothic or Jacobean buildings set behind college walls is an Anglo-Saxon model established at Oxford and Cambridge and replicated around the world, at places such as Harvard and Melbourne. It is a mediaeval conception which is unrelated to the scale and style of modern mass education.

Another image which must change in this scenario is that of the professor. The changes outlined here include crucial changes in pedagogy and in the roles available to academic staff. Stars will remain few in number and can behave much as they do today. The other role will be for facilitators, those who can add to the experience of students using technological means and enhance discussion and interaction.

While in some ways the global virtual graduate school may seem like a cold technological solution, it will only succeed if the customers will accept it. One important advantage over traditional distance learning material is the shift from self-paced learning to interactive learning, using the technologies described above.

Max Hopper (1990) wrote of the complex issues arising from analysis of data derived from online transaction processing in the airline business. An online business school would open up all its activities to very detailed scrutiny. The schools could assess operations at a very low level of aggregation. One important benefit is the forecasting of demand which this would permit. The organizational consequences of this level of transparency would transform the business school and the roles of the academic staff. Courses could no longer be claimed to be essential, they would be deomonstrated to be so or dropped. Interestingly it would also be possible for employers to do the same sort of analysis. Thus they would be able to measure the effeectiveness of institutions, programmes and modules, even individual sessions. An obvious comparison is with the Otis Elevator case study, though similar effects have been seen in the US Army in its electronically monitored manoeuvres.

A global virtual business school

While brochures for business schools feature prominently the use of laptop and other computers, the main medium of information transfer remains paper together with chalk and the spoken word. This is changing only slowly, not least because of the conservatism of the professors. Moreover, pressure on students in business schools is considerable, restricting their time to test out innovative open learning materials. All too quickly students adapt to the routine of paper cases, from which they are not easily broken. Concern for quality of learning is also a serious problem, especially in such a competitive marketplace.

Technologies are changing the ways in which people work, such as experimentation and adoption of virtual offices. Given that MBA courses should prepare people for their future careers they should both alert students to the trends and give them exposure to the technologies. At worst they should not be too anachronistic. For example, some business schools have already gone into strategic partnerships with local Internet service providers allowing them to offer students cheap access to the Internet with a customized interface including the business school logo with private chat areas and newsgroups for specific courses, modules and syndicates.

There are many factors in the MBA industry and in individual business schools which create the conditions for change. However, the implications of such moves are considerable, requiring enormous change for schools and for academic staff. Changing market conditions including globalization and intense competition create opportunities for those schools able and willing to act. Information technology has been used for strategic intent by companies for over fifteen years, sometimes at the instigation of academics. Now could be the time to apply it to business schools. Yet few schools have the competences and academic staff to make information technology an attractive route to achieve differentiation, though some have recently established multimedia and technology centres to help them.

Market conditions for the MBA industry are of hundreds of relatively small suppliers producing largely undifferentiated products. The primary difference is the strength of the brand name, reflected in the league tables published by *Business Week* and *US News & Report.* All are seeking to modify their courses, though none has yet found the new model, assuming one exists. Market growth is in the executive MBA, shorter courses which often mix traditional distance learning, on-campus teaching and overseas visits. New markets have been opened up in Central and Eastern Europe, the former Soviet Union, Asia and Latin America. In these countries the two-year full-time residential US model is neither established nor readily acceptable. Newer and cheaper formats are called for. Even in the USA, the established model is under threat, eroded by financial uncertainty. At the same time companies, reluctant to lose good staff to MBA programmes, have been improving their in-house training programmes.

Business schools are beginning to recognize the value of a life-long relationship; one that extends beyond long-term begging. While fees for four semesters make a tidy sum, a sequence of short courses over forty years can seem even more attractive. Once such a model is accepted it is no longer necessary to cram material into a single programme which students may not need for years to come or ever. Instead students and their employers can select materials when necessary. In the extreme case this might be just-in-time learning. Such a network would also create a powerful means to bind together the network of alumni.

The key to success is acceptance of the qualification in the marketplace. For the present, business schools retain the advantage that they are recognised as credible certifiers of managers. However, there are alternative suppliers, such as American Management Association (AMA), Management Centre Europe (MCE), management consultancies and in-house operations such as Motorola and Macdonald's Universities.

In order to match global demand for management education there is a corresponding need for global systems. Not even the most advanced technology overcomes the problems of time zones so that, like the financial markets, there are attractions to having centres or at least academic staff in different parts of the world.

One of the messages from the use of information technology in business is the importance of the blocking coalition. This presents two areas of consideration, geographic coverage and technological competence. There are hundreds of potential schools in North America and thousands of professors, largely undifferentiated. However, the position in other continents is rather different, with few potential partnering schools in Europe, Asia and Africa. One consortium of say, east and west coast USA with Brazil, the Netherlands, South Africa, India and Japan would be very hard to replicate. In technology there are only a handful of players able to deliver truly global service of these perhaps the most interesting is the grouping of British Telecommunications-MCI-News Corporation.* This has satellite coverage of the Americas, Europe, Asia and Australia, together with substantial research and production capabilities.

One of the more innovative of the business schools in the USA is the Fuqua Business School at Duke University in North Carolina which offers a Global Executive MBA (GEMBA). Although based at Durham (North Carolina) it is using a mixture of conventional teaching, access over the Internet, videoconferencing and overseas study visits (to Salzburg, Hong Kong and Shanghai). Students are also provided with material on pages of World Wide Web (e.g. McCann 1995).

A global virtual library school

The market for library and information science qualifications is very different from that for business schools. While there is also a profusion of library schools, many face real challenges to their survival, with some good schools having closed. Some have joined faculties of social science, while others have been drawn into business schools, indicating considerable differences in strategy and positioning. While the library schools have shown differing and sometimes hesitant approaches this seems to be in marked contrast to the libraries themselves which are throwing themselves into digital storage and electronic delivery. In some senses the libraries have little choice, since they might otherwise be bypassed. It remains to be seen whether the library schools should not follow their example.

The old model of the library as a great store of paper-based knowledge is being displaced by electronics. Materials are increasingly held in electronic form, allowing a shift in philosophy from just-in-case to just-in-time, with electronic documents being delivered as and when they are needed. Increasingly libraries can be virtual, that is their 'holdings' are an appearance created using the technology. This is a time of great and continuing change in the library and information science professions, therefore there is a pressing need for individual libraries to have access to the very best learning environments.

There is no immediate reason why a library school need be any more 'real' than a library, provided it offers its customers a similar or higher level of service. The Internet already reaches many people in the profession and they are adding familiarity with its idiosyncracies to their existing skills in online databases.

The key question is whether a global virtual library school might work. If one of the top three or five schools was to succeed in creating such a virtual school, then the damage to other schools could be considerable. Regional or national prestige might allow some institutions to hold out for a time against such competition. In the long run such an institution would draw to itself the very best students.

The economics of a global virtual library school are unlikely to draw in large sums of money for development of the technical systems and organisational alliances. However, if these are developed elsewhere, it would be a matter of picking them off the shelf. The areas where they might be developed are in business schools and in medical schools. In the first instance this may disadvantage those departments which have moved to faculties of social science. Those in business schools may be more entrepreneurial or closer to the development of similar iniatives in other fields.

Conclusions

The use of information technology creates strategic possibilities in graduate schools which simply must be addressed. This is not because of a technological imperative, but because of the strategic effect such developments could have. Were one alliance to appear offering a global virtual library school or global virtual business school with all the resources and professional standing that that requires, it might well leave only niche markets for other players. The paradigm shift here is *not* in technology but in the relationship between students and institutions. A virtual graduate school with its core value of lifelong strategic partnership for learning, drawing in its customers ever more closely, would be able to transform the education marketplace.

The strategic shift from just-in-case education (or worse, from ancient and revered curricula) to just-in-time learning is not intended to be an industrialization of education. Rather it is a shift to a partnership which guarantees professional development as and when 'students' need it for their work. Though here the word student should be seen as encompassing graduate students and alumni, those who have qualified and gone on but who return, sometimes to teach, sometimes to learn, sometimes both. It is to revert to an ancient sense of a university, one incorporating a body of graduates, a college of scholars. Technology now makes it possible to achieve that mediaeval sense of academic community.

It is more than a happy coincidence that the technology to make this possible arrives with the need for continuous training; both are created by the same drivers of change in our society and economy.

Admittedly, choosing the Internet as the delivery mechanism is like trying to ride a whirlwind – it is difficult and dangerous. There is a need for substantive and high quality technological and design support as well as for critical evaluation of the results. At least an individual or an institution that is learning is likely to exand its options.

It would be foolish to claim that these forecasts are accurate, they are not. The intention of this paper is to alert readers to possibilities, bad as well as good. The virtual school is unlikely to be virtuous, but if successful could have a devastating effect on its competitors.

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Library facilities in the polytechnics of Ghana in view of their new roles as tertiary institutions

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Abstract

In 1993, all of the six polytechnic institutions in Ghana were elevated to the status of tertiary-level institutions. This study is an assessment of the state of polytechnic libraries in relation to their new roles as libraries of tertiary institutions. It seeks to investigate the adequacy or otherwise of personnel, finance, materials, accommodation, equipment and services in these libraries. The writers conclude that these facilities are woefully inadequate and have to be improved in order to enhance the academic performance of the students and staff of the polytechnics.

Background

There are six polytechnics in Ghana located at Accra, Cape Coast, Ho, Kumasi, Tamale and Takoradi. Of these, except for Cape Coast Polytechnic, the rest had their beginnings as technical institutes. The oldest of these technical institutes – Accra, Kumasi and Takoradi – were merely redesigned polytechnics by a government order in 1963. Between 1986-1988, Ho and Tamale became polytechnics.

In 1987 the Government of Ghana embarked upon a series of educational reforms which among other things were aimed at reorienting the structure and content of education.

To achieve this objective it was widely accepted that tertiary level education must be rationalized to ensure its relevance to national development. Consequently the government, through the Ministry of Education and Culture, in December 1986 commissioned a six man University Rationalization Committee (URC). This committee was charged to provide the basic information which will enable a medium term university sector development plan to be formulated for Ghana.[1]

The URC, noting the decline in enrolments of the three Universities since 1980, high student-staff ratios, no availability of teaching materials and support services such as libraries, recommended a new tertiary educational system.[2]

Such a system was to be made up of three main groups, namely, the universities and university colleges, polytechnics and a unified comprehensive college system.

This recommendation meant that the committee had taken cognizance of the role of other institutions were playing in the country's manpower development. The position of the polytechnics in their turnout of middle level manpower especially for industry and commerce, was particularly noted.

Thus their conversion to tertiary status requires a great deal of careful planning in terms of infrastructure requirements. The recommendations stated specifically that the existing facilities such as classrooms, laboratories, workshops and library services of the polytechnics at Accra, Kumasi and Takoradi must be examined and refurbished and new ones provided where they do not exist in order to meet the demands of their upgraded status.

It was also felt that in the absence of these facilities the polytechnics' prime aim of educating students who will contribute effectively to the nation's economy will not be achieved.[3]

The most important of these facilities which will promote independent learning in the students and encourage private study is libraries. Such libraries will be expected to serve as 'learning resource centres' with books and periodicals covering, in embryo, the whole range of recorded knowledge. They should play a central role in the educational programme of the polytechnics and would serve as a major teaching tool which will counteract the specialization inculcated by teaching courses.

Objective of the study

The main objective of this study is to assess the state of polytechnic libraries in relation to their new roles as libraries of tertiary institutions. It seeks to bring out their problems in terms of physical facilities, stock, staffing, finance and services. From these, suggestions are made in an attempt to find solutions to some of these problems.

Methodology

Two sets of questionnaires based on structured interviews were developed. One set was administered to the Principals of all the Polytechnics and another set administered to the Librarians of the Polytechnics.

Personal visits were also made to Ho, Kumasi and Accra Polytechnics where discussions were held with the Principals and Librarians.

The on-site visits also enabled the writers to make a closer survey of the libraries including the buildings, materials, equipment, and other facilities and services.

Accra Polytechnic
This Polytechnic was established in 1949 and raised to tertiary level status in 1993. It provides Technical, Vocational and Commercial courses, among others. It had 12 Departments with 103 teaching staff. The staff are mainly holders of BA/BSc degrees and a few with postgraduate qualifications. Total number of students is 3,500.

Library staff
The library has one professional librarian with a Graduate Diploma in Library Studies and two subprofessionals, both having the Undergraduate Diploma in Librarianship. These were all trained at the University of Ghana, Legon.

Library committee
Although there is a Library Committee, it was not functioning at the time of the interview.

Library materials
There are 8,000 books and no academic journals. The users are mainly staff and students of the Polytechnic. The main areas of subject emphasis are Management, Accounting and Engineering. The materials are mostly acquired through direct purchase and donations. According the Librarian, the materials are adequate and he is able to meet the needs of the users. There is no system of inter-library loan with other libraries.

Library budget
On paper, the library has a separate budget. According to the Librarian, although he is aware that 10% of the institutional budget is allocated to the library, he does not know how much this amounts to. However, the library budget is inadequate.

Accommodation
The building presently accommodating the library is inadequate. However, there are plans for a new library building. Funding is now being sought for the new building.

Equipment
There is no equipment in the library although the Librarian has some training in information technology and also believes that this makes access to materials easier.

Vision about the library
According to the Librarian, the polytechnic staff have a very good impression of the library. He is of the view that with the present status of polytechnics as part of the tertiarylevel education system, there is the need for more usereducation to take care of more complex information needs and requirements. He is also of the view that the Ghana Library Association and the Committee of University Librarians should monitor the Polytechnic libraries in order to get them prepared for their new status as information support for tertiary level study and research.

Views of the Principal
The Principal is of the view that a tertiary institution needs a library as an important centre for the dissemination of knowledge. In order to carry out these perceptions, he suggests that a completely new building suitably designed for a library should be built for the Polytechnic. This would be able to accommodate about one third of the student population. He also suggests that the library must include various equipment and new technologies in order to enhance its status and enable it to perform its functions more effectively.

In order to achieve his aims, he intends to find solutions to some of the problems already encountered in the library such as space, staff, materials and equipment.

Ho Polytechnic
Ho Polytechnic was established in 1987 and raised to tertiary level status in 1993. It provides training for middle-level engineers and technicians, among others. There are 8 Departments with 80 members of teaching staff. The staff are mainly holders of bachelors degrees with a few postgraduates. There are 1,800 students.

Library staff
As at the time of the interview, the library had only one semiprofessional staff with an Undergraduate diploma in Library Studies obtained from the University of Ghana, Legon. There are four other Library Assistants with GCE 'O' Level Certificates. (An interview had just been held for the appointment of a Professional Librarian).

Library committee
The library has a committee which was not functioning at the time of the interview.

Library materials
The Library has 10,000 books with no academic journals. The users are mainly students and staff of the Polytechnic. There is no collection development policy and the main areas of emphasis are technical and scientific materials. Materials are acquired mainly through direct purchase and donations. According to the Librarian, the resources are inadequate. Users are often referred to the Ho Public Library as there are no other libraries nearby and the library has no inter-library loan arrangement with any other library.

Library budget
There is no separate budget for the library and the Library Assistant is unaware of how much of the institutional budget is allocated to the library. According to the Library Assistant, the library budget is inadequate.

Accommodation
The library is operating in a temporary building. However, at the time of the interview, a new building had been completed with would hopefully reduce the congestion in the present building. It was suggested to the Principal that the present temporary block be retained to serve as the Students' Reference Library while the new block would be used for circulation, reference materials and journals.

Equipment
The library has no equipment and none of the staff has any training in information technology. The Library Assistant agreed that the introduction of information technology in the library will improve information provision.

Vision about the library
According to the Library Assistant, the staff have a very good impression of the library, especially in the area of Engineering where the Principal is particularly interested. He hopes that there will soon be an increase in the number of staff so that an evening shift will be introduced in the library.

Views of the Principal
The Principal was most appreciative of the role of the library in the Polytechnic. According to him, the library is the nerve-centre of the Polytechnic and no tertiary institution can function without one. He hopes that very soon the Librarian who has been appointed will assume duty to improve upon the services of the library. He also hopes that information technology will soon play its proper role in the library to enhance information provision. He intends in the near future, to introduce 'Library Use' as a compulsory course for all first-year students in the Polytechnic.

Kumasi Polytechnic
This Polytechnic was established in 1954 and elevated to tertiary status in 1993. It provides training in middle-level management and vocational courses, among others. It has 14 Departments with 93 teaching staff. The staff are mainly bachelor degree holders with a few postgraduates. The total number of students is 3,104.

Library staff
The staff of the library include two professionals with a Graduate Diploma in Library Studies and five sub-professionals with an Undergraduate Diploma in Librarianship, all from the University of Ghana, Legon.

Library committee
The library has a committee which deliberates on all issues concerning the library and makes recommendations to the Principal on behalf of the library.

Library materials
The library has 7,374 books and no academic journals. The users are mainly the Polytechnic staff and students. There is a collection development policy and the special subject emphasis includes Engineering, Management and Fashion Design. Materials are acquired mainly through direct purchases, orders and donations. According to the Librarian, the resources are inadequate. Users are often referred to either the University of Science and Technology or British Council Libraries in Kumasi as there is no system of inter-library loan.

Library budget
There is no separate budget for the library and the Librarian is not even aware of what percentage of the institutional budget is allocated to the library. All the same, the amount allocated to the library is adequate.

Accommodation
Although the location of the library is very central and convenient, the present building housing the library is inadequate. The library is separated into three different rooms which makes organization and supervision difficult. However, there are plans for a future library which would be funded from World Bank sources.

Equipment
There is no equipment in the library and none of the staff has any training in information technology. The Librarian is, however, of the view that the introduction of information technology will enhance the services in the library.

Vision about the library
The Librarian is of the view that the staff of the Polytechnic, especially the Principal, are very interested in the library. He is hoping that the library will soon be fully computerized and the subject areas of documentation broadened. He also requests that staff of the library be trained in information technology.

Views of the Principal
The Principal is of the view that the library is the backbone of the Polytechnic. He hopes it will therefore be expanded to accommodate more students and materials. This is to be achieved through the proposed World Bank Project of providing a five-storey block for the library. It is his intention to computerize the monitoring and searching process in the library.

Takoradi Polytechnic
Takoradi Polytechnic was established in 1955 and elevated to tertiary status in 1993. It provides training in Business, Engineering and Craft courses, among others. There are 10 Departments with 73 full-time and 17 part-time teachers. The teaching staff are mainly bachelors degree holders with a few postgraduates and Higher National Diplomates. There are 2,561 students.

Library staff
The library has one Temporary Library Assistant with an Undergraduate Diploma in Librarianship from the University of Ghana, Legon. There are four other staff who are permanent and mostly hold GCE 'O' Level Certificates.

Library committee
The library has a committee that meets to take decisions concerning the development of the library.

Library materials
The library has 6,000 books and no academic journals. The users are mainly staff and students of the Polytechnic. There is no collection development policy and the special areas of emphasis are Business and Engineering. Materials are obtained mainly through direct purchase and donations. In the view of the Librarian, the materials are inadequate but they make do with what is available. They have no inter-library loan agreements with any library.

Library budget
There is no separate budget for the library and the Library Assistant had no knowledge of the amount of money allocated to the library. Anyway, the library budget is inadequate.

Accommodation
The building presently housing the library is inadequate. But there are plans by the government to put up a new library building.

Equipment
There is no equipment in the library and none of the staff has any training in information technology. However, the Library Assistant agrees that information technology will enhance information delivery in the library.

Vision about the library
The staff of the Polytechnic have a good impression of the library. However, it is the view of the Library Assistant that the library can only play the important role expected in the Polytechnic if adequate funding is provided for materials and equipment. He also hopes that the much talked about introduction of information technology in the library will not just be lip-service.

Views of the Principal
According to the Principal, the role of the library in the Polytechnic should include supporting students' learning and promoting research by keeping and providing up-to-date information for users. This can only be carried out with the expansion of space in the library; acquisition of core journals; establishing a computerized network system; intensive staff recruitment for the library and the creation of departmental libraries. Efforts are being made to seek assistance from the Ministry of Education to carry out these objectives.

Tamale Polytechnic
Tamale Polytechnic was established in 1951 and elevated to tertiary status in 1993. It provides training for middle-level manpower in Engineering, Building/Construction and Business, among others. There are 9 Departments with 48 teaching staff. Most of the teaching staff are holders of bachelors degrees and Higher National Diplomas (HND). There are 1,500 students.

Library staff
There are three members of staff in the library. The most senior among them has only the GCE 'O' Level Certificate. There is neither a professional nor a sub-professional librarian. The only training obtained by the staff is a few months' attachment with the Regional Library at Tamale.

Library committee
There is no library committee.

Library materials
The library has about 10,000 books and 5 academic journals. The users are mainly staff and students of the Polytechnic. There is no collection development policy and the special subject emphasis is on Engineering and Building. Materials are acquired mainly by orders through the Ministry of Education's World Bank Project, and some donations. There is no interlibrary loan agreement with any other library.

Library budget
There is no separate budget for the library and the Library Assistant does not know how much money is allocated to the library. The amount is, all the same, inadequate.

Accommodation
The building housing the library is inadequate and there are plans for a new building to be funded by the Ministry of Education.

Equipment
The library has two air-conditioners and one personal computer. Unfortunately, none of the members of staff has any training in information technology. They, however, agree that the introduction of the new technology will improve service and functions in the library.

Vision about the library
Staff and students are impressed with the library. However the limited collection and services have to be improved in order to maintain this good opinion.

Views of the Principal
The role of the library includes the development of the reading habit and independent research among

the students. However, according to the Principal, this can only be achieved with the employment of qualified personnel; expansion of library facilities; and the encouragement of library staff to attend conferences and workshops to keep abreast of new trends and techniques.

Cape Coast Polytechnic

This Polytechnic was established in 1986 and elevated to tertiary status in 1993. It provides training for middle-level manpower in Business and Engineering, among others. There are 6 Departments with 24 teaching staff. The teaching staff are mainly holders of bachelors degrees with a few Diplomates. There are 811 students.

Library staff

The library has one Library Assistant with a Diploma in Librarianship from the University of Ghana, Legon. There is no professional librarian.

Library committee

The library has a committee which sees to the general administration of the library.

Library materials

There are 4,171 books and no academic journals. Users are mainly staff and students of the polytechnic. There is no collection development policy and the special areas of emphasis are Engineering and Business. Materials are acquired mainly through orders and donations. According to the Library Assistant, the resources are inadequate. Users are often directed to the University of Cape Coast Library for materials which are unavailable in the Polytechnic library. The Library has no interlibrary loan agreement with any other library.

Library budget

According to the Library Assistant, there is no separate budget for the library and he does not know how much money is allocated to the library. Whatever the amount, it is inadequate for the library's present needs.

Accommodation

The building presently housing the library is inadequate and there are plans to put up a new building with funding from the government.

Equipment

There is no equipment in the library and the Library Assistant has no training in information technology.

Vision about the library

According to the Library Assistant, although the staff of the Polytechnic have a good impression of the library, there could be further improvement with the expansion of the library; recruitment of more staff; and the provision of more materials and equipment.

Views of the Principal

The Principal expressed similar views to those of the Library Assistant. He feels that the impact of the library on the Polytechnic could be enhanced even more, with the provision of qualified staff and better facilities for the library.

Recommendations

Based on the findings of this study, the following proposals are made to enhance the development of polytechnic libraries in Ghana.

Library budget

As indicated in the summary of the report, none of the six polytechnic libraries has a separate, specific budget allocated to them from the general polytechnic budget. This does not help in the proper running of a library in a tertiary institution. It is recommended that a fixed percentage of the polytechnic budget for the year is allocated to the library. The ideal percentage recommended is 10% of the institutional budget. If this is not attainable, a reasonable figure should be decided upon. The amount of money must be made known to the Librarian who will then draw up his or her estimates of expenditure for the year on the basis of that amount.

Acquisition policy

The collection of a library must be relevant to the needs of the user community. Collection development is thus a planned and purposeful activity which should be carried out within the context of an acquisition policy.

All the Polytechnic libraries presently lack written acquisition policies. It is recommended that each of the libraries formulate such a policy based on the purpose of the polytechnic and the areas of special subject emphasis. This will ensure that scarce resources are not dissipated on irrelevant or marginal areas.

Academic journals

For a library in a tertiary level institution, academic journals are *sine qua non.* Journals have a number of advantages over books including their provision of up-to-date information and their frequency in publication.

With the exception of Tamale Polytechnic, none of the other Polytechnics had any academic journals. Attempts should be made to subscribe to relevant journals. It is, however, suggested that the Librarians in the Polytechnics should consult the various subject teachers and the Principals in order to determine which journals are more relevant to their programmes, so that these are subscribed most to. It is recommended that not more than 5 titles of journals should be subscribed to by each Department of the Polytechnic at this stage.

It is more convenient to use agents for journal subscriptions. Some of the notable overseas agents are Blackwells and Everett, both of the UK, and Swets of Holland.

Library cooperation

No library, however well equipped with materials and other resources, is self-sufficient. Libraries therefore rely on one another to optimize their resources.

It is recommended that the Polytechnic libraries investigate the possibilities of establishing one or more of the following links:

(a) Polytechnic – Polytechnic (Ghana)
(b) Polytechnic – University (Ghana)
(c) Polytechnic – Polytechnic (Overseas)

There could be an easier acquisition of materials not available in the libraries through interlending and document supply. To promote the latter, the libraries should initiate, as a matter of urgency, schemes for compiling union catalogues of documents and a union list of their collective journal holdings.

Library committee

It is recommended that those Polytechnics that do not have Library Committees set these up immediately. Those that have non-functional Committees should get them functioning immediately.

The composition of the Library Committee should be broad based and made up of the following:

i. Principal – Chairman
ii. One representative from each Department
iii. Librarian and an Assistant (if there is one)
iv. Two students
v. In attendance: Registrar or his or her representative, Finance Officer or Bursar.

Boards and committees

The Polytechnic Librarian should be a member of the Academic Board. In addition to this he or his representative (who must be a senior member) should serve on the following committees:

i. Board of Studies
ii. Bookshop Board
iii. Publications Board

Workshops, seminars and conferences

These are organized periodically at the local or international levels in order to assist information professionals in acquiring knowledge and skills on new and modern trends in information provision. It is recommended that librarians in Ghana's polytechnics be encouraged to attend some of these workshops and conferences. Apart from the benefits of acquiring better skills, attendance at these workshops and conferences also enables the librarians to interact with colleagues, share ideas, and find solutions to common problems. All these ensure poise and confidence professionally.

In-service training

As a short-term measure, it is recommended that the Polytechnic librarians be sent on attachments for in-service training in the various university libraries in the country. Librarians from Accra and Ho Polytechnics could be sent to Balme Library, University of Ghana. Those from Takoradi and Cape Coast Polytechnics could be attached to the University of Cape Coast library. Librarians from Kumasi Polytechnic could be sent to the University of Science and Technology library and those from Tamale Polytechnic could be attached to the University for Development Studies library.

Ghana Library Association

It is also recommended that all the Polytechnic libraries register as institutional members of the Ghana Library Association. As an institutional member of the Association, the libraries should be able to sponsor their staff to attend activities of the Association such as conferences, seminars and workshops and benefit from interaction with other professionals.

It is also hoped that in the near future, the Polytechnics will be able to establish a 'Polytechnics Libraries Section' of the Ghana Library Association or the 'Committee of Polytechnic Librarians' similar to the 'Committee of University Librarians'.

Equipment and furniture

All the Polytechnic libraries need additional equipment and furniture. These will include shelves, display racks (for journals), catalogue cabinets, reading tables and chairs, accession machines and filing cabinets. The librarians could liaise with the university libraries to ascertain the particular library furniture they would require.

In view of the current drive towards automating library housekeeping processes, it is envisaged that the polytechnic libraries would also embrace the IT revolution in the short to medium term.

It is therefore strongly recommended that basic IT equipment of a PC, telephone and email and CD-ROM facilities be made available for each library. These facilities would enable the librarians to communicate with one another and with other institutions.

Photocopying machines

Going by the results of the survey, none of the Polytechnic libraries has a photocopying machine. The advantages that would otherwise have been gained from having this equipment are thus lost to these libraries.

The availability of a photocopier promotes the effective use of library resources. It also eliminates or minimises the incidence of book losses through theft and mutilation.

Arrangements should be made to acquire at least one photocopier for each of the polytechnic libraries. Customers who make photocopying requests should pay for them. Library materials copied on the premises, however, should attract a discount.

Accommodation

With the exception of Ho Polytechnic, all the other polytechnics are either contemplating extensions to their present buildings or construction of new buildings. It is suggested that whatever the situation, the architects and building contractors should work together in close consultation with professional librarians before starting any new buildings for a library. Modular architecture is recommended as this has proven to be most effective and efficient for modern library functions and requirements.

Working tools

Most of the libraries do not have any properly organized arrangement of their materials. An organized arrangement is facilitated by using standard classification and cataloguing systems such as Library of Congress Classification System (LC) or the Dewey Decimal Classification System (DDC) and the Anglo American Cataloguing Rules (AACRII 2nd ed.). These basic tools are not found in most of the Polytechnic libraries.

The University libraries in Ghana use LC while the Ghana Library Board uses the DDC. It is recommended that all the polytechnic libraries in the country use one type of classification system – either the LC or the DDC.

Meanwhile, immediate steps should be taken to acquire the following relevant bibliographic tools:

i. LC or DDC depending on the preference of the library
ii. LC subject headings list, and
iii. AACRII 2nd ed.

User education

Optimal use of the Polytechnic libraries can be achieved through an effective user education programme. It is interesting to note that two of the Polytechnics (Accra and Ho) mentioned the need for user education in their libraries. It will be necessary for more users to patronise the new resources and gain the confidence that the libraries are now able to provide services.

The trend in tertiary education these days is to introduce a compulsory course in 'Information retrieval' or 'Use of libraries'. This is a credit earning course which must be taken, preferably at the 100 Level, by all students.

It is recommended that the Polytechnics introduce this course in their curricula. Similar courses have been instituted at the University of Cape Coast and the University for Development Studies, Tamale. The Polytechnics can obtain their syllabi with the view of modifying them to suit their purposes. The Polytechnic Librarians should be able to teach this course.

Staffing

The Polytechnic libraries are woefully understaffed. This basically accounts for the backlog of books requiring processing and the generally poor services provided. It is proposed that each of the libraries should have a full time staff strength ranging between 10 and 12. The composition of staff should be as follows:

Professional Librarian	2
Library Assistants *(with the Undergraduate Diploma in Librarianship)*	4
Junior Library Assistants *(GCE 'O' Level/SSS)*	4
Secretary/Typist	1
Messenger/Cleaner	1
Total	**12**

The above is in line with a recommendation that all the libraries should operate on two shifts – morning and evening.

Staff development

Staff development enhances job performance leading to increased productivity while it also ensures retention of staff. The following recommendations are made for improved development in the Polytechnic libraries:

i. all staff with the Graduate Diploma in Library Studies should immediately be sent abroad for one-year Masters Degree Programmes in Information Science. (This course is presently not available in Ghana);
ii. where staff with the Graduate Diploma are not available, these should be recruited immediately and sent for further training;
iii. library Assistants with GCE 'O' Level should be given preferential admission into the Undergraduate Diploma Course at the University of Ghana, Legon; and
iv. junior Library Assistants with MSLC should be enrolled in the six-week attachment course at the Ghana Library Board for basic practical training.

Library automation

We are in the information age. Libraries all over the world have either automated or are automating their procedures to facilitate the exploitation and use of their resources. Library automation also makes networking easier for the purposes of accessing other information centres that are now available in national, regional networks and on the global system, the Internet.

It is recommended that the Polytechnic libraries in Ghana seriously consider automating their processes and procedures. There is a software for library automation which was developed by UNESCO. It is known as CDS/ISIS. The software can be obtained free of charge from the UNESCO Headquarters in France.

Bibliographic databases on CD-ROMs are also useful tools for a tertiary-level library. They enable users to know what has been published and in which journals. The British Council, Accra, or the University libraries, particularly the Balme Library and the University of Science and Technology (UST) Library can assist in the ordering of the CD-ROMs as well as photocopying coupons for a fee. The Balme Library, University of Ghana, can also be contacted for advice.

Conclusion

The Ghana Education Service has taken a very bold and sensible decision to elevate the polytechnics from second cycle institutions to tertiary-level institutions. Tertiary level institutions normally offer specialized courses that lead to high level qualifications in certain specified fields. Therefore, as a matter of urgency, facilities and services in the polytechnic libraries must be improved in order to sustain their new status so that they can contribute effectively towards the educational development of the country.

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Consumer health information in the year 2000

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Abstract
This paper argues that while there have been significant advances in the development of consumer health information services over the past decade, there is no room for complacency as we approach the new millennium. If we are to avoid the dangers of complacency, passivity and superficiality we need to develop new skills. The future consumer health information professional will need to be skilled in creating information products, interpreting information needs and reviewing and synthesizing information to support decision making.

Introduction

There is no doubt that consumer health information has been one of the last decade's information 'megatrends'. During the 1980s and early 1990s increasing attention has been given to the provision of information on health care issues to patients, relatives, carers and the wider public. Over this period, medical libraries have had an increasing inclination and ability to provide information to patients. At the same time, there has been a blossoming in new consumer health information services, combining the subject expertize of the medical library with the accessibility of the public library. And there has been an unprecedented expansion in the amount of published literature on health topics for lay people.

Increasing consumerism in society generally is reflected in our behaviour as patients. People are no longer content to be told what's good for them. They want access to information which enables them to weigh up risks and benefits, and to make informed choices between options in health care. This is in sharp contrast to the prevailing attitude as recently as the 1970s, which could be summed up as 'a little knowledge is a dangerous thing'. Informed health care consumerism is the new orthodoxy.

Patient's charter

In the UK this new orthodoxy is most clearly expressed in the government's *Patient's Charter* launched by the Secretary of State for Health in 1991. The Patient's Charter depends crucially for its success on information. The right to be registered with a GP depends on the availability of information about local GP services (which practices have a woman partner, which offer complementary therapies, where ethnic minority languages are spoken etc.) The right to a second opinion depends on information being available about consultant special interests and centres of excellence. The right to an explanation of treatment and the right to access to health records are rights concerned entirely with information.

The new rights introduce a right to information on health services available locally, quality standards, how to complain and waiting times for treatment. The guarantee of treatment within two years (now eighteen months) has created a major new demand for information on comparative waiting times for treatment to allow patients and their GPs the opportunity of identifying shorter waiting times for treatment if the operation cannot be carried out locally within the guaranteed time.

Health information services

Recognizing this need for health information for the public, the government required all Regional Health Authorities to set up consumer health information services from April 1992. The Department of Health issued Health Service Guidelines HSG(92)21 and HSG(95)44 providing a detailed specification of the services to be provided. Health Authorities were instructed to set up a freephone service to provide the public with information on local NHS services, waiting times, complaints procedures, Patient's Charter standards, coping with illness and treatment, and maintaining good health.

In January 1993 the Secretary of State for Health launched a single national freephone number for health information throughout the UK. Members of the public can now dial Freephone 66 55 44 and wherever they are in the country they will be automatically routed to their nearest Regional Health Information Service (RHIS). This number was publicized by a major national press advertising campaign. For the first time anywhere in the world, ordinary people can access a national consumer health information service, free of charge with a single telephone call.

This national system is underpinned by a rich network of locally based consumer health information services in a variety of settings: libraries, advice centres, disability centres, health shops, mobiles, hospital information points [1-2]. It is important to remember that consumer health information services were not created, top down, by the Patient's Charter. Some of the most innovative and excellent services have developed, bottom up, from local community initiatives, often on a multi-agency basis. The recent boom in consumer health information services may have a political impetus but it is founded on the vision and local good practice of services since the late 1970s.

Scratching the surface

It would be tempting to be complacent about the rapid development and successes in consumer health information over the past few years. We have certainly seen major changes in attitude to the availability of information, political enthusiasm at the highest levels, and, in a time of financial stringency, the availability of new funding for CHI initiatives.

But, if we look more carefully, we will see that the potential of consumer health information services has hardly been realised. We are still scratching the surface. Too often CHI services can be:

- complacent: we are content that services are provided at all, not that they are done well
- passive: we are content for consumers to come to us and we do not exploit new technologies
- static: our information does not develop rapidly to meet current concerns and is not based on the best current evidence
- superficial: we provide generalist information which does not answer the questions people really want to know or give them real power in decision making.

If we are to combat these tendencies we will need a new breed of health information professional.

Beyond the complacent information service

In the recent debate on the ordination of women priests in the UK, misogynist commentators have been fond of quoting the English lexicographer Dr Samuel Johnson's opinion of preaching women and acrobatic dogs: 'It is not done well, but you are surprised to find it done at all.'[3]

Until recently this might have been a reasonable summary of opinion on consumer health information services. We were so pleased to see information services being established at all that we were not over concerned about whether they were done well. This may have been acceptable in the early days of an emerging information specialism but it is the sign of maturity in any discipline to be concerned with standards and quality.

As consumer health information services multiply in a variety of settings, there is a danger that there will be inconsistent standards and varying quality of service. There is a particular danger in the UK. Here the establishment and promotion of a single national telephone number with a single umbrella service name (Health Information Service) holds out the promise to the public of consistent quality of information provision wherever you enter the system. Even today this is clearly not the case. Despite the best efforts of government guidelines and specifications, there is a wide variety in service provision. This is particularly the case since local Health Authorities have been allowed to use the 0800 number, leading to the development of new HIS access points (23 in all).

In other areas of health care and information provision there are clear standards linked to accreditation schemes. The availability of the HIS 0800 number is close to a national accreditation scheme for consumer health information services, whereby services which meet quality standards are entitled to receive calls via the national freephone number and display a nationally – or eventually internationally – recognised 'Health Information Service' symbol. As part of its central support work for HIS funded by the NHS Executive, The Help for Health Trust is now developing a more detailed system of health information service peer review.

There have already been valuable beginnings. CHI professionals in the UK and USA are debating the ethics of health information provision[4] and applying the principles of quality management to individual services[5].

A key aspect of the development of quality services has been the increase in training opportunities for consumer health information staff. A review of education and training in information management in health care published in 1993[6] included a chapter on consumer health information, describing training initiatives in communication skills, information sources, disability and ethnic awareness, and stress management. Training in these areas is increasingly being provided by professional bodies, library schools and non-library agencies including the National Association of Citizen's Advice Bureaux. It may now be timely to be addressing with appropriate higher education, vocational and NHS training bodies the need for a more formal qualification in consumer health information work.

Beyond the passive information service

Currently consumer health information services reach a very small section of the population. Since the Health Information Service was launched a million enquiries have been answered – out of a UK population of 50 million people, many of whom would have health information needs every year. Those who do call tend to be white, middle aged, middle class. Enquiry monitoring by services in the UK and USA also indicates with remarkable consistency that callers are predominantly female by a factor of 3:1. Women are seeking information not only for their own health but for the health of their children, partners and elderly relatives.

Consumer health information is increasingly a research based specialism, and work in Wessex and Cambridge is beginning to identify the nature and extent of unmet need for health information. A symposium issue of *Health Libraries Review* devoted to consumer health information reviews work in this area.[7] Individual services are beginning to be responsive to local community needs through a range of initiatives. Helplines are being promoted through talking newspapers for visually handicapped people. Minicom lines are being installed for people with hearing difficulties. Services in areas with large ethnic minority populations are employing outreach workers with relevant language skills. Those with more diverse language needs are subscribing to tele-interpreting services like Language Line.

Information technologies are certain to be of increasing importance in enabling CHI services to bring information closer to the consumer. Today most consumer health information services rely on little more than the telephone and fax for receipt of enquiries and the personal computer for storage and retrieval of databases of CHI information. The consumer health information database Helpbox, developed by The Help for Health Trust as a diskette based system, is widely in use throughout the UK. This database is also increasingly available on public access videotext systems in libraries, health care settings and public places. In the UK there has been little development of CD-ROM databases for consumer end users, although in the USA systems like the *Health Reference Center* (Information Access) may point the way forward. One compact disk contains a shelf of consumer health reference books, an index to several hundred popular health and professional journals, some of them in full text, and a directory of support groups and information services. At present the high cost and almost exclusively American coverage makes the *Health Reference Center* of limited interest to the European market. But as CD-ROM technology becomes increasingly cheaper the potential for swift and comprehensive access to information for the ordinary consumer is enormous.

Even more interesting is the development of interactive systems designed to involve patients in shared decision making[8]. First developed in the USA by the Dartmouth based Foundation for Informed Medical Decision Making and now being piloted in the UK by the Kings Fund Centre, these SDPs (shared decision making programs) are based on interactive videodisc technology. The aim is to review the published research on the outcomes of different treatment options (for example surgery or watchful waiting for enlarged prostate) and to present this information in a way which is tailored to the individual patient's history and priorities. By providing information about the risks and benefits of different treatment options, the patient is actively involved in decisions about his or her own care.

Every day thousands of Americans participate in electronic self help groups without leaving their homes. As long ago as 1984 the New Jersey Self Help Clearinghouse was piloting support groups for people with rare conditions over the CompuServe network.[9] A logical extension of the teleconferencing concept, using networks and bulletin boards provides the opportunity for housebound people, those in remote areas, or those with rare conditions to gain new access to mutual support and information.

There is now sufficient interest in the application of health informatics for consumers for the first National Conference on Consumer Health Informatics to have been held in Wisconsin in July 1993[10]. The conference reviewed developments in computer and telecommunications applications in the light of the Clinton/Gore administration's commitment to a national information infrastructure.

It would be easy to dismiss consumer health informatics as access for the advantaged, networking for the beautiful people. However experience is beginning to show a surprising level of acceptability of video and telephone based systems in particular. In England the Kings Fund Centre successfully piloted shared decision making programs on breast cancer with black women in the London Borough of Brent. In Wisconsin, older women easily mastered home computer based programs provided by researchers which gave them access to a full text library of information on breast cancer, and allowed them to communicate with other women with breast cancer via a modem. In Ohio a voice mail system provides access to information for pregnant drug users in inner city Cleveland.

Beyond the static information service

Ten years ago we were delighted when we heard examples of patients being provided with information about how a particular treatment is carried out and what to expect when you come into hospital. Evidence from a recent UK study by the Audit Commission into communication in hospitals[11] indicates that this is still a major need which is not always being met. But it is also true that when we do provide information it does not always reflect the most up to date evidence on clinical practice.

Many treatments which have been carried out for years are now being shown to be of questionable benefit. The new emphasis on systematic reviews of the outcome and effectiveness of treatments has recently led to the value of a number of interventions being challenged, and yet patients are still being asked to consent to treatments (and the general public to fund health care initiatives) without accurate understandable information on their effectiveness. Too often the information we provide to consumers is *process* based rather than *outcome* based. Patient information literature tells patients what happens in a particular procedure; it rarely tells them about its likely effectiveness and the pros and cons of having it done in the first place.

There is evidence of change. In 1992 the US government Agency for Health Care Policy and Research carried out a comprehensive review of pain management and produced a set of clinical practice guidelines for professionals[12]. At the same time a consumer booklet *Pain control after surgery: a patient's guide* was produced based on the evidence of the clinical guidelines. Now in the UK the CRD at York and the Cochrane Centre are working to produce consumer versions of reviews of effectiveness of treatment for glue ear and cataracts, and of interventions in pregnancy and childbirth. The pregnancy and childbirth work is being carried out in collaboration with the National Childbirth Trust and the independent Midwives Information and Resource Service (MIDIRS).

Beyond the superficial information service

Since 1994, health authorities have been required to publish information for the public on the performance of hospitals. These 'league tables', (as they are universally known, although the government insists they are not) will be published in newspapers and available in health service premises, libraries etc. They will for the first time give information about how successful hospitals are in meeting Patient's Charter targets on waiting times for treatment, assessment in accident emergency departments, cancellation of operations, and waits in outpatient departments.

The publication of these tables has been criticized as being superficial and misleading. There is something in this, but the fact remains that if this information is collected and available it should be in the public domain. A greater concern should be – does it answer the questions the public want to know? We tell patients how long they will have to wait and what the environment will be like, but very little about whether the treatment will be any good when they do get to see the doctor. As an article in the *New England Journal of Medicine* observed in 1988[13] 'Patients are forced to judge medical care on quality of amenities because they rarely have suitable information to base it on anything else'.

The concept of providing information to consumers as a spur to provider quality is perhaps unremarkable in privileged Western societies. However it is also gaining acceptance in less predictable environments. In 1993 the first patient information centre in India was opened in the Bombay slums with the following mission: 'It is believed that well-informed patients, who demand the best treatment available, will act as an incentive for doctors to update their skills and for hospitals to improve their facilities.'[14]

We have come a long way in the last ten years in providing the public with information on the health services available to them, on self help organizations, and on everyday self care. If we are fully to realize the potential of health information services for consumers we must now grasp the nettle of providing information about quality and outcomes of treatment. It will not be easy to present this information in an understandable way but that is our challenge as information providers – not a problem for consumers.

The future health information professional

In recent years there has been a growing body of research evidence on the positive effects of the provision of information to patients. This can extend to improved patient satisfaction, reduction in pain, fewer postoperative complications, shorter hospital stays, reduction in blood pressure, improved self management of conditions including diabetes and kidney disease. In 1991, after reviewing the relationship between communication and health outcomes, an international conference in Toronto issued a consensus statement[15] underlining the effect of information giving. This gave particular emphasis to the benefits of information giving in two key areas: reduction of anxiety and increased compliance with medical instructions.

The power of information to produce a happier, more compliant patient population is becoming evident. Many people – including many patients – welcome this. But information should be more than an opium of the people. It should be about answering the difficult questions as well as about giving reassurance. It means raising expectations, challenging professional mystiques and outdated orthodoxies, sharing decision making, sharing power in the year 2000.

Nick Moore[16] has pointed to the emergence of three complementary groups of information professionals for the new millennium:

- creators – who design, produce and develop information products and services
- communicators – who interpret information needs and tailor information provision to the user
- consolidators – who research, analyse and synthesise information

In the world of health information these new professionals will increasingly be:

- using information design skills to create health information databases, CD-ROM products, Web Sites, and more accessible patient leaflets
- using high levels of interpersonal skills to interpret and communicate information in a variety of settings including helplines and drop in centres
- using critical appraisal and systematic review skills to search the literature, identify high quality evidence and synthesize this in a usable form to support decision making by patients and professionals in an informed partnership.

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Effectiveness and efficiency – new roles and new skills for health librarians

Judith Palmer
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Paper presented at the Aslib Conference on The Future Information Professional, held on 28-29 May in London.

Abstract
I would guess that it is almost impossible to attend any conference these days and especially one with the word 'future' in the title without someone, if not everyone, emphasising and remphasising that we are all living in a time of great change and uncertainty. Although it is the conceit of every generation to suppose themselves unique, anyone who has lived and worked in the NHS for the past 5 years might be forgiven for claiming that they have been subject to quite unprecedented change.

Change in the NHS

The National Health Service successive waves of 'reforms', reorganizations and mergers which began in 1990, have created an environment in which there are no certainties and where, for many, survival has become the primary objective. It is regrettable but true that in times of organizational chaos libraries tend to migrate to the peripheries of importance. However, I believe that although this has been a time of trauma, several important developments and many new opportunities for health librarians have emerged.

Without doubt the most important of these developments has been the new emphasis in healthcare on evidence-based decision making.

Let me digress for a moment. Soon after I took up my post in Oxford 3 years ago, I made an appointment to talk to Muir Gray, then our Director of Public Health, now Director of R&D, about my first impressions and my intentions for developing healthcare libraries in the region. On his table was a book called *Clinical epidemiology* by David Sackett *et al.*[1] I asked him what clinical epidemiology was – I knew, of course, what clinical meant and also what epidemiology meant but I had not come across the two words in juxtaposition before. I was surprized by the vehemence of his enthusiasm. 'You should read it', he said. 'This book is going to change the way we practise medicine'. I thought that that was probably an exaggeration, but convinced by the strength of his response, I read most of it and was converted. I liked the direct style of writing and I especially liked the pervasive role that libraries and information played in this brave new world. At last, it seemed to me, somebody had the sense, not only to realize the crucial importance of libraries and librarians, but also to acknowledge it. I would similarly urge you to read it!

So what is evidence based healthcare? It is a process of lifelong, self directed learning in which caring for patients creates the need for clinically important information.

It is NOT a replacement for intuition from experience, rather it helps to identify knowledge gaps and uncertainty and encourages resort to evidence.

It is NOT a replacement for findings from history and examination, rather it helps to assess the significance of these.

We can think of it as comprising 5 steps:

1. formulate a clear clinical question arising from a patient problem;
2. search the literature;
3. critically appraise (or quality filter) the results of the search for validity and usefulness;
4. incorporate the findings into clinical practice;
5. evaluate the results.

You will see now why I thought that within this intellectual framework libraries and librarians might find a new and important role to play.

It is probably true to say that the NHS reforms and the EBM movement are inextricably linked. Although the current round of reformation started in 1979 with the Royal Commission, continued with the Griffiths Report in 1983 and culminated in 1989 with *Working for Patients*, it is Michael Peckham's NHS R&D strategy, *Research for Health* which was published in 1991, that has had most impact on the creation and provision of information within and without libraries in the UK. In a talk given to the Institute of Health Service Managers[2] in 1994, Alan Langlands described the R & D Strategy as having three broad aims:

- to promote knowledge based decision making;
- to encourage the NHS to look to research as a way of tackling service problems; and,
- to encourage the rapid dissemination of research data to inform clinicians,managers and policy makers.

These aims, you will agree, place information firmly at the centre of the agenda and reflect the NHS plans, some of which were already in motion, and some nearly complete, to set up and support new information resources. The UK Cochrane Centre was established in 1992. In January 1993 a start was made on compiling a register of NHS research (the National Research Register (NRR)) and in December 1993 the Centre for Reviews and Dissemination was set up in York. In the Oxford Region, with money from the NHS E, the GRIP (Getting Research into Practice) and CASP (Critical Appraisal Skills for Purchasers) projects were started. A research based, information seeking culture was gradually emerging. Now, less than 5 years later, it is difficult to overestimate the importance of the Cochrane Database of Systematic Reviews and the international growth of the Cochrane Collaboration, the Effectiveness Bulletins emanating from the Centre for Reviews and Dissemination or the Outcomes Bulletins from the Nuffield Institute of Health. And in a more modest way, but none the less noticeable, has been the impact of a monthly tabloid 'journal' *Bandolier!* These developments mirror similar trends in medicine in the US, in Canada, in Australia and elsewhere. Last year the *BMJ* produced a new journal – *Evidence Based Medicine* – modelled on the lines of the *ACP Journal Club* (a supplement to *Annals of Internal Medicine*).

Some of you may recognize that the title of my talk – Effectiveness and Efficiency is the same as that of Archie Cochrane's book which was published in 1971[3]. Archie Cochrane was a Scot who lived and worked in Wales as an epidemiologist. His book which was quickly recognized nationally and internationally as a classic text, emphasized how greater attention to the evidence in the literature and especially the results of randomized control trials (where these were appropriate) would produce an efficient and effective health service. In 1992 the international Cochrane Collaboration and Cochrane Centre in the UK were established. In Oxford we have been particularly lucky in having close links with both the Cochrane Centre and with McMaster.

Change in healthcare libraries

Meanwhile what was happening in libraries?

Medical libraries have always been at the forefront of innovation within the profession of librarianship. I believe that this is partly because the bibliography of medicine is noticeably coherent and relatively self-contained, compared to, say agriculture, or the natural and physical sciences. This has meant that for many clinicians there appears no need to stray beyond the covers of *Index Medicus* or the periphery of *Medline* on CD-ROM.

In addition, clinicians are noticeably more demanding than practitioners and researchers in other disciplines. This pressure has forced the pace of change in libraries. Medical libraries were among the first to install automated library systems, to adopt CD-ROM and to introduce end-user searching.

In 1991 several different groups of health librarians were tackling the problems precipitated by the NHS reforms in different ways.

- The King's Fund Library carried out a review of health information services,
- the Regional Librarians Group also carried out a similar review and made representations to the British Library. These reviews found that libraries were becoming increasingly marginalized, that librarians were facing competition from other information providers, that there were no recognizable national strategies, that there was massive duplication, fragmentation and information hoarding and worst of all that there was little research being done to investigate the contribution that libraries and information services might make to improving the quality of patient care.

As a result the British Library established a Medical Review Panel. The first and major achievement of this Panel was to sponsor a national seminar. Because Baroness Cumberlege gave her active support to this venture, the seminar and its sucessor a year later came to be known as the Cumberlege seminars. These provided a common platform for health professionals from every sector – managers, clinicians, PAMS, researchers, technicians and librarians – to discuss information issues that straddle discipline boundaries and the desirability for a national health information strategy. As a result of the second seminar, in October 1993, four strategic objectives were identified:

- to improve the quality of the knowledge base and its coordination;
- to ensure that the knowledge base is disseminated widely using the technology that is becoming available;
- to identify, promote and disseminate good local practice;
- to improve the local organization and transmission of the knowlege base.

The use of critical appraisal as a means to filter the literature for all health professionals, including librarians, was underlined.

Following on from Cumberlege 2 the NHS E recognized the role that libraries must play in collecting, organizing, disseminating and providing access to the knowledge base by establishing the post of NHS Library Adviser whose task it was to take forward the Cumberlege objectives. Margaret Haines was appointed in 1995.

Change in libraries and information services

Librarians were having to cope with changes other than the NHS reforms and diminishing resources. Developments in computing, in networking and in almost every aspect of information management that you care to think of required constant monitoring. And although the Internet had been in existence for over 20 years, commercial providers had begun to appear and it became possible for individuals to gain access to global networks. From 1993 use rose and continues to rise exponentially. Last year a *BMJ* editorial pointed out that in 1993 there were 100 sites on the World Wide Web, and estimated that by the end of 1995 there would be 40,000.

With each new IT development and hyperbolic article in the press, the expectations of library users have risen dramatically and quite unrealistically. Stories of the virtual library abound and of course, most of them are true. But as someone said one of the problems of a library without walls is that the roof can fall in. It is also true that the idea of a virtual or electronic library is based on the premise that somebody, somewhere is maintaining a near perfect archive of the literature.

As libraries become focussed on access rather than holdings and as journal holdings which were collected 'just-in-case' become replaced with document delivery systems which operate 'just-in-time', we shall increasingly have to rely on the skills of information specialists to sift and synthesize the evidence and to ease our access to the vast, uncontrollable mass of information that will certainly not diminish and can only grow. Today there are few technical impediments to total access to everything from your desktop. The main contraints are time, money, expertize, information skills, publishers and copyright.

The objective of the librarian will continue to be to bring together human beings and recorded knowledge in as fruitful a relationship as is humanly possible. That the library is a social and intellectual phenomenon existing in a particular physical location may cease to be true. However, it is important to recognize that the advent of electronic libraries will not solve all problems. We still know too little about the psychology and sociology of human cognition and communication, nor do we have a failsafe method of finding the right information at the right time. It is unlikely that the electronic library will automatically solve the problems of access (as anyone who uses the Internet will know only too well) – similarly electronic information does not automatically equate with effective retrieval – indexes where they exist are still created by fallible humans. Carol Lefebvre at the Cochrane Centre has demonstrated unequivocally how inadequate human indexers are at the NLM when inputting data to *Medline.*

These changes in our world can be nicely summed up as:

- print to electronic
- storage to access
- free to fee
- new competitors
- new user expectations
- new currcicular requirements
- new and more information sources
- more to do with less money
- distance learning
- judgement based to evidence based

Given this backdrop of tumultuous change, what is to be done? And what does this all mean for librarians?

Skills and knowledge for the 21st Century

So what are the skills and kinds of knowledge that it is important for librarians to have in the years ahead? I believe that librarians can perform a more central role in introducing new users to the increasingly sophisticated information environment of health care and help encourage a wide range of practitioners to adopt evidence-based approaches to health care and decision-making.

Librarians can also be major supporters of evidence based practice. Many clinicians realise that they need help in searching the major databases, such as *Medline*, for systematic reviews and other evidence of clinical effectiveness and that they require support in making *effective* use of electronic databases and text retrieval systems.

The skills required for analyzing, interpreting and applying a wide range of information do not come naturally to most people as we know from our own personal experience. Librarians should be playing a major part in helping clinicians, researchers, health care workers and students to make optimum use of information.

This is my particular checklist for healthcare:

- organizational politics
- how to operate in a market place
- how to negotiate
- how to use and teach critical appraisal as a means to filter the literature
- why research based decision making is important in healthcare and in our own profession
- how to teach in all contexts – from individuals to large groups
- how to facilitate learning
- new information sources and products
- new technologies
- the Internet
- how to create personal storage and retrieval systems.

The Medical Library Association of America has also recognized the importance of organizational, political and transferable skills as well as subject based skills in its important Educational Policy Statement – Platform for Change[4].

There are any number of earnest papers written about what librarians should and should not do and what they should and should not be. Rather than merely exhort them to raise their profile, to become more interactive, to become more proactive, to develop transferrable skills – to become paragons of virtue or prototypes of the perfect professional, I believe that it is important to provide librarians with the opportunities to occupy previously uninhabited niches and to cope with the new demands of an evidence based system of health care.

ELECTRONIC PUBLISHING REPORT

A new report on the future of publishing in Europe has just been published by the European Commission DGXIII and is distributed by Aslib.

Strategic developments for the European publishing industry towards the year 2000 analyses the changes that have taken place in electronic publishing over the past three years and examines the implications for the future. The focus is on developments in online publishing, and the enormous growth of Internet-based services using the World Wide Web.

The report clearly sets out the new opportunities offered to traditional publishers (*and potential new players*), as well as the factors that will undermine currently profitable businesses. The world of publishing is in a state of flux – this report provides clear guidelines for developing effective strategies to meet the challenge.

Contents: Overview of trends: overall trends, scenario development; Conclusions – drivers and constraints: market development, technology development, user behaviour; Conclusions – options and challenges: marketing strategies, strategic roles of industries, regulatory environment; Research findings – market development, technology development, user behaviour, marketing strategies, strategic roles of industries, regulatory environment; Appendices: selected examples of EP; case studies (America Online, Vorarlberg Online, Graphics Express, Reuters Junior).

Strategic developments for the European publishing industry towards the year 2000 is based on a study by leading management consultants, Andersen Consulting, with assistance from the Institute for Information Economy and New Media at Techno-Z FH-Salzburg, and supported by the European Newspapers Publishers Association and the Fédération des Associations d'Editeurs de Périodiques de la CE.

Main report: £60 as hard copy or on CD-ROM, £80 if purchased together. Further details available from: Publications Department, Aslib, The Association for Information Management, Information House, 20-24 Old Street, London EC1V 9AP. Tel: +44 (0) 171 253 4488. Fax: +44 (0) 171 430 0514. Email: pubs@aslib.co.uk.

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Librarian of the 21st Century

I would like to conclude by telling you briefly about the Librarian of the 21st Century Project and how we have used the skills from this project in developing a series of workshops for health professionals to find the evidence.

The Librarian of the 21st Century Project ran from January to July 1995 and was supported by the Anglia and Oxford NHS Regional Health Authority and by the Director of Research and Development, Dr Muir Gray. The Health Care Libraries Unit working with the librarians in the Network and with David Streatfield, an information management consultant, designed a programme of professional development – The Librarian of the 21st Century. This project aimed:

1. to encourage librarians in the Region to explore the issues involved in gaining and maintaining access to the knowledge base of health care;
2. to examine their changing role in the health service;
3. to recognize that the intensified information demands and the impact of information technology will influence what skills and knowledge they will require if they are to work effectively in future.

The programme was launched in January last year with an introductory seminar led by Joanne Marshall, who is an Associate Professor in the Faculty of Library and Information Science at the University of Toronto, a leading centre for this work in Canada. She gave a *tour de force* review of the trends affecting the

- workforce (labour shortage, skills mismatch, demographic trends, changing values and lifestyles)
- workplace in general (restructuring, outsourcing, quality initiatives, customer focus, lifelong learning and professional development, teamworking, performance measurement) and
- libraries (new technology, diminishing resources, information explosion, changing patterns of scholarly communication, changing curricula, interdisciplinarity, changing user expectations, new competitors).

In February the programme emphasis was on critical appraisal with a specially adapted workshop for librarians based on the series of workshops aimed at public health physicians, NHS Purchasers and other health care professionals organised by the CASP Team led by Dr Ruairidh Milne of the NHS Anglia and Oxford Region.

In a pair of two-day workshops in March led by Sharon Markless, Senior Lecturer in Professional Development at Christ Church College, Canterbury, the aim was to enhance the ability of participants to plan and provide effective sessions with information users. By the end of this workshop, participants had explored some of the components of effective adult learning and related these to their own teaching priorities as librarians, had looked at some theories of learning and been provided with the opportunity to put some of these theories into practice in a microteaching project.

In preparation for the next pair of events, a self-assessment questionnaire was distributed in order to identify those skills that were perceived to be lacking or in need of updating. The main needs identified by the questionnaires were for greater expertize in navigating the Internet, for more knowledge on new information resources in the NHS and for updated skills in information retrieval. The next pair of two-day seminars, held in June, were based largely on the results of this survey. A one-day workshop on *Demystifying the Internet* led by Robert Kiley, Health Sciences Librarian, Frimley Park Hospital NHS Trust) was followed by *Superhighways and Byways* in which participants were informed of new developments in online searching, were given an overview of the work of the UK Cochrane Centre and the Centre for Reviews and Dissemination in York and introduced to new UK information resources in health.

A final half-day workshop was arranged for July 4th in order to allow participants to review the Librarian of the 21st Century programme as a whole and consider what changes would be desirable if the programme were to be repeated. Working in small groups, particpants were asked to identify elements in the programme which should become part of the regular repertoire of professional development for the Region; to consider how best to build on the knowledge and experience gained through the programme and to practice any skills acquired; and to identify any other areas where staff development would be useful in equipping participants to be more effective Librarians of the 21st Century.

Evaluating the programme

Each event was evaluated and responses collated. The final workshop provided the opportunity for participants to look back at the entire programme and also to look forward. There was a strong consensus that the high points of the programme were the teaching skills workshops and Internet workshops with the critical appraisal workshop, database search sessions and the introductory day all mentioned. Inevitably, mistakes were made. Some events were deemed to be dispensible and omissions noted. All particpants identified 'marketing of library services' as a first priority, although there were different ideas about the components of such a workshop.

After the 21st Century

As a result we have run an extremely successful two-day workshop on marketing and a one-day workshop on facilitation skills. In the East end of the region a revized version of our programme is well under way which incorporates the broad structure of our programme but includes our omissions.

It would be easy to dismiss The Librarian of the 21st Century as 'just another training programme for medical/health librarians'. The importance of this project is threefold:

- we have actually shown librarians how to do it better, not only exhorted them to do so;
- we have given them a set of skills which they can develop further;
- we have attempted to provide a cohort of librarians with the same package of experience and to expose them simultaneously to new trends and developments in their professional and organizational milieu.

This last factor must affect not only the way in which they carry out their own jobs, but also affect the quality of library provision throughout the region.

One of the ways that librarians in the region have been able to use their skills is through the CASP FEW workshops which we have developed for all health professionals.

Beginning in 1992 a series of workshops was held in Oxford to introduce public health physicians and those working closely with them, to the techniques of critical appraisal and to the special importance of systematic reviews and meta-analysis as a means to sift and synthesize the evidence. The success of the workshops encouraged the organizers to believe that the programme could be developed to cover other target groups, and in 1994 a new series of workshops – Critical Appraisal Skills for Purchasers (CASP) – was launched with the slogan 'Find, Appraise, Act'.

Participants in these workshops expressed an interest in learning how to find the evidence. As a result the Health Care Libraries Unit (HCLU) of Oxford University and librarians in the Health Libraries and Information Network (HeLIN) of the Anglia and Oxford NHS Region worked with the CASP team to develop a pilot workshop aimed at those who had already attended a critical appraisal skills workshop. The pilot has been followed by a number of such workshops throughout the region, each one building on previous experience and incorporating improvements of design and presentation. Similarly librarians in our network have been involved in running a Search Clinic at the 1st International EBM Workshop and will do so again this year. They are also involved in a new University of Oxford's Masters Programme in Evidence-Based Health Care – an important module of which is concerned with information skills.

Conclusion

In conclusion I believe that if libraries are not to be increasingly marginalized, we must, as librarians, consider how best to become more proactive and supportive to people struggling with the increasing diversity of information. An investment in continuing professional development is one of the most important weapons we have if we wish to continue to be taken seriously by other professional groups and by those who use our libraries. Librarians must seize the opportunity to make their libraries the Centres of Evidence in the organizations in which they work.

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John Edu Korsah

INCORPORATING ABSTRACT GENERATION INTO AN ONLINE RETRIEVAL INTERFACE FOR A LIBRARY NEWSPAPER CUTTING SYSTEM
A.A. Alemna, C.O. Kisiedu and I.K. Antwi

VETERINARY INFORMATION: SOURCES AND USE
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Editorial

In a phrase that must resonate with every student and lecturer in the land, JE Korsah in his article on *Graduate education in library, archive and information science in Ghana* says of the MPhil programme 'There is, theoretically, a time limit of two years to complete, but in practice students take much longer; the thesis appears to be the main obstacle to all students owing to lack of professional literature, inadequate funding and poor supervision and poor staffing'. Before categorizing the quote as representing only a developing country, consider Garry Humphrey's letter in the Correspondence section, and then see whether or not there are signs of the same thing starting to happen in the UK. So many organizations have seen their library and information services greatly reduced or even destroyed: in the private sector to realize short-term assets to hold up dividends; and in the public sector to increase 'efficiency' by reducing cost. The profession is desperately short of cogent arguments to demonstrate why the effective organization of information resources matters. Perhaps one reason is that we do not seem to have mounted any recent studies of just what this information is that we say is so valuable. Particularizing the issue and being more specific about what it is that is of importance might help.

The LIS profession can be alarmingly introspective: forever concerned with its own view of itself, while uttering the plaintive cry that no-one understands its point of view. It is a pleasure therefore to publish Eric Ratcliffe's paper on *Local poets and libraries.* Eric is a library user (as well as a poet and publisher of poetry) and has confessed that at times during his research he felt hampered by not being a librarian. He felt that had he been, he would have been more conversant with library policy and direction, local government reorganization and so on. Librarians are left to draw their own conclusions as to whether or not he is right; and might also care to make a brief resume of what they know of poetry and its publishing in this country.

The paper on *Veterinary information: sources and uses* includes extensive lists of Web sites that may be of use when pursuing research in this area. What is intriguing about this is: not many years ago such a list would have been confined to libraries and, perhaps, their online catalogues. Actual contact between enquirer and hard primary information would have been quite unusual. What the Web is doing is making it possible to bring primary information (as well as secondary sources) directly to users. It is the equivalent of delivering the entire library, its catalogues, the books and their authors to each user, who then has the means of reply.

Of course the Web is not like that – yet. Resources are partial, often unedited, and can be hard to find. Technical access problems can make using the system a frustrating experience. The tools for access and navigation are primitive, and so on. But this will all improve. The Web has wrought the biggest change ever in how we obtain and view information. Information-gathering is no longer a one-way passive process. No matter how inadequate the present systems and resources may be, they surely indicate what will be available in the future. It may make it easier then for LIS professionals to demonstrate that information matters.

Peter Gillman
Editor

Graduate education in library, archive and information science in Ghana

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Abstract

To meet the challenges of a wide variety of jobs involved in library and information work, trained personnel are a sine qua non. *This paper discusses the training of library and information science personnel at the postgraduate level in Ghana's only library school, the Department of Library and Archival Studies (DLAS), University of Ghana, Legon. It touches on a number of issues like programmes and courses offered, duration, general admission requirements, facilities and resources available as well as mode of instruction and assessment. Problems militating against the smooth operation of this library school are also examined. It concludes that, in spite of these problems, the DLAS has been a great force in the development and enhancement of the library profession in Ghana.*

Introduction

Ghana's formal educational system was a product of the British colonial era. Education in the country was accelerated immediately after independence in 1957 and in the early 1960s because Ghanaians regarded education at all levels as the key to the development of the economy and their social welfare.

To achieve the goals for which these educational institutions were set up, libraries were established. To staff these libraries, and to meet the challenge of all the new developments, trained personnel were required. It was also observed that libraries established before the 1940s in the Gold Coast (Ghana) did not have highly qualified staff; the librarian was employed solely to 'preserve and look after' the books on the shelves. The few qualified librarians were expatriates and other library workers became 'qualified' through in-service training.

Historical perspective of library and archival education in Ghana

The history of formal library education in Ghana dates back to 1944 when the first Regional Library Training Institute was established at Achimota College, Gold Coast (Ghana) under the directorship of Ethel Fegan[1]. It was designed to serve Nigeria, Sierra Leone, Gold Coast and The Gambia. This Institute was established for an experimental period of three years mainly to prepare students from British West African countries for the first professional examination of the British Library Association. Unfortunately, the Institute was closed down in 1945 upon a recommendation by the Advisory Committee of the Achimota College that '...it would be a mistake to enrol students for whom there was no definite prospect of employment...'[2].

The Lancour Report[3] recommended among other things the establishment of a library school in one of the British West African countries; preferably it should be in a university, particularly if the training were to be at the postgraduate level. The report finally recommended the University College, Ibadan, Nigeria (founded in the same year – 1948 – as the University College of the Gold Coast) as the institution best suited and equipped for such a school.

Apparently, the educated elite and, especially, the few leading librarians in Ghana were dissatisfied with Lancour's recommendation. Among others, it was strongly felt that Ghana should have its own library school. Consequently, another library school was duly set up (in Ghana) in 1962 under the auspices of the Ghana Library Board. The courses led to the Associateship of the British Library Association. Hitherto, the Ghana Library Board was responsible for the training of its staff as well as staff of other libraries in the country after the collapse of the Library Training Institute at Achimota. In pursuance of the fact that if this school were to retain recognition for its programmes and diplomas, it had to be affiliated to a university, it was moved to the University of Ghana and designated the Department of Library Studies within the faculty of Social Science in October 1965.

Originally, this department offered a three-year programme leading to the BA in Library Studies. This degree programme was discontinued and replaced with a two-year postgraduate diploma in 1967 but the duration of this new programme was further reduced to one year in 1969. In 1972 the Academic Board of the university approved another programme leading to the MA degree in Librarianship.

In 1975, Unesco in collaboration with UNDP established and attached a Regional Training Centre for Archivists (to serve the countries of English-speaking Africa) to the Department of Library Studies. Thus, courses in archival studies were introduced and the Department became known as the Department of Library & Archival Studies (DLAS) from that date. DLAS is an institutional member of the International Federation of Library Associations (IFLA) and the International Council on Archives (ICA)[4].

Graduate programmes and general admission requirements

There are two main full-time graduate programmes in Library Archive and Information Science available at DLAS. These programmes aim at providing professionally qualified library/information personnel to take charge of library and documentation centres or hold senior positions in large libraries and archives.

The first and basic programme is the one calendar year graduate diploma which prepares new entrants to the profession.

The entry requirements are: a good first degree (*i.e.* second class honours or better) in any subject(s) obtained from a recognized university; at least a year's working experience in a recognized library/archives and an oral interview. Candidates without the requisite working experience may, however, be admitted. In the case of archival studies, candidates with degrees in the social sciences, especially history, are preferred.

The second programme is the MPhil in Library/Archival Studies which came into full operation in the 1989/90 academic year. The MPhil degree prepares students to play professional roles in research and teaching processes in the universities and research institutions and to fulfil the broader cultural, educational and social purposes of libraries and archives. In Ghana it is a requirement for librarians in academic and research libraries to acquire a Master's degree to enhance their professional advancement. Applicants are expected to possess either a good first degree in library or archival studies or a good first degree plus the graduate diploma in the relevant field from a recognized university or an equivalent qualification to be approved by the University of Ghana and at least three years' working experience in a library/archival institution. In addition candidates would normally be required to pass an interview to be conducted by DLAS. DLAS offers no PhD programmes; education at MPhil/PhD levels is frequently undertaken abroad mainly in Nigeria, UK and USA for obvious reasons.

Courses offered

For the graduate diploma in library studies, students are expected to undertake a 9-month course work, practicals as well as 4 three hour compulsory papers in: Management of Libraries and Administrative Science; Technical Services (cataloguing / classification, collection development, conservation); Information Science and Reference and Bibliographical Services.

For students pursuing the graduate diploma in archival studies the 4 three hour papers involve: Records Management and Administrative Science; Archives Administration; Information Science and Administrative History. In addition a 3-month long essay/project work on an approved topic which constitutes a fifth paper should be submitted to the department by every student.

It should be noted that DLAS offers combined courses in library/ archival studies to students. In other words, all graduate diploma students take two common courses, namely Administrative Science and Information Science. The Information Science course comprises principles of Information Science, Computer Applications, Research Methods and Reprography.

The MPhil degree in Library/Archival Studies which is to be completed in two academic years, is in two parts. Part I (first year) is devoted to course work in preparation for a written examination – three 3-hour papers in core (common) areas namely: Advanced Information Science; Techniques of Research in Information Studies; Information in Society. Students are further required to pass one elective paper chosen from the following two main groups – Administrative History/Organisation of Information Resources/Registry Management for Archival students. Candidates offering Librarianship select one from Information Retrieval/Sources of Information (in one of Science and Technology, the Social Sciences, The Humanities), Publishing and the Book Trade. The choice of the elective determines whether the degree should be in Archival or Library Studies. In the second year (Part II), students must complete and defend their theses or dissertations on approved topics of not less than 50,000 words.

There is, theoretically, a time limit of two years to complete the MPhil, but in practice students take much longer; the thesis appears to be the main obstacle to all students owing to lack of professional literature, inadequate funding, poor supervision and poor staffing. The average number of students enrolled for graduate studies in DLAS in a year is 16. The total number of students admitted into the MPhil programme for the past five years (1990-95) is 10.

Graduate students are encouraged to write academic articles on a wide range of interesting topics and to participate in seminars and workshops organized by DLAS and the Ghana Library Association.

Facilities and resources available

In the context of this paper, facilities and resources are categorized as follows: physical facilities such as a departmental library, laboratories, rooms for regular classes, seminars /workshops, demonstrations and offices for faculty/research staff. Learning and teaching materials such as current textbooks, journals, research reports and equipment like computers, audio-visual aids, photocopiers and microform reading materials constitute the resources. In terms of human resources, DLAS' full-time teaching staff has never exceeded six.

In terms of physical facilities DLAS is housed in an old building which was augmented by a new block.

Through bilateral and international aid, some basic modern technologies such as those mentioned above have been acquired to support learning, teaching and research. It has been observed that access to them is restricted and some of them are idle for want of repairs. Besides, library educators in Ghana usually look elsewhere for literature to carry out effective instruction and research though the issue of relevance and appropriateness is stressed.

Mode of instruction and assessment

A variety of teaching methods is used but the 'chalk and talk' method (lecture delivery) is the predominant one in this school. It is, however, used in conjunction with seminars (involving students, faculty members and practising librarians) and tutorials in the form of classroom discussions. Surprisingly, there have been very few presentations of seminars by staff and students in the past couple of years. With the exception of some practical instruction involving computers, the use of audio-visual aids is not pronounced in the department though a limited number of these items are available.

Visits and tours and short attachment activities to different and renowned libraries/archives are undertaken by the graduate-diploma students during vacations (usually twice a year). These important components help students: familiarize themselves with practical issues relating to library and information work; appreciate the practices and procedures adopted by libraries and archives; and get exposure to the resources of these institutions. Heads of such institutions visited by the students are expected to present reports to the DLAS.

Examination and assessment of students are undertaken to determine the extent to which teaching and learning objectives are achieved. Generally, at the graduate level, performance is assessed by means of course work and thesis/dissertation to be submitted by a particular date. This particular aspect of the teaching/learning process is done in two main ways: first DLAS largely follows the traditional pattern of assessing its students – the 3-hour written examinations for the various papers (after the coursework) which are internally assessed but externally moderated. This method constitutes 70% of the final grading. The second aspect which constitutes the remaining 30% is through continuous assessment. The pass mark for graduate students is 50%. In fact student performance in written assignments, seminar, tutorials and class tests/projects which show an increasing tendency towards real-life situations have been adopted because such developments tend to make the course subject-centred rather than examination-centred.

Oral examinations are also much used and these refer to the *viva voce* for theses at the MPhil level.

Issues and problems

In achieving the goals set for DLAS it grapples with some issues and problems which are worth looking into. These problems feature primarily in areas such as recognition of the importance and worth of 'information centres', staff recruitment, retention and development, physical and material resources, research, relations with information professionals and the Ghana Library Association, funding and curriculum review.

There is an apparent lack of proper recognition of the importance and worth of 'information centres' and professionals in Ghana. To a large extent, it is still very difficult to alter or erase completely the erroneous view that libraries and archives are mere dumping grounds for books and other 'dead' materials in this country. This mentality reinforces the decisions of institutional and governmental authorities to invest in non-library areas. This unhealthy situation is the most serious challenge to library development in Ghana.

There is also the issue of recruiting suitable candidates from the science and technology fields into the department for training because this calibre of graduates prefer other jobs with relatively better conditions of service.

The education and training of information personnel require the availability of an adequate number of experienced and highly qualified educators. Unfortunately, the major constraint is poor staffing which is perennial. This has arisen because of difficulty in recruiting and retaining staff, the 'exodus' or brain drain affecting our universities, retirements and resignations. The result is that the few faculty members, 'made up of six full-time and two part-time lecturers'[5] in post are overburdened while enrolment is reduced. Besides, certain research programmes and courses could not be offered. For example, a PhD degree programme was approved in the 1970s but has not been implemented.

DLAS has the problem of lack of adequate facilities and resources to carry out effective teaching and research at this level of education, a situation contrary to what the International Federation of Library Association[6] and Universal Information System in Science & Technology[7] have stipulated. Existing facilities have not been upgraded or refurbished since they were constructed or installed many years ago. DLAS library and the demonstration room/laboratory are stocked with obsolete and outdated materials. Indeed, some of these items are irrelevant to modern day library, archive and information science education in Ghana. The University's annual report highlighted this problem as follows: '...the old building is gradually collapsing and the floor tiles in both the new and old are giving way; students lack access to current and relevant materials and enriched practical experience'[8].

In pursuing its objectives and goals, DLAS faces financial constraints This has come about because generally education in Ghana is underfunded. DLAS depends, to a large extent, on its parent institution (University of Ghana) for funding and therefore competes with other departments for budgetary allocation. The result is that meagre financial resources are allocated to it, and this accounts for the inadequate resources and the existing poor facilities and infrastructure. There is also a virtual lack of funds to support activities like field trips and library tours so students undertake such activities at their own expense. Research grants are currently scarce for LIS education. The situation has worsened since UNDP/Unesco severed links with DLAS in 1982.

In developing countries, progress in the library and information services (including training) is greatly influenced by national associations which comprise professionals and even sub-professionals. The situation in Ghana is different. Alemna points out that 'the Ghana Library Association (GLA) has virtually no control over admissions, education and training, and the professional practice itself... there is an urgent need for changes to be made in the library education programme but the Academic Board of the University controls the education and training of LIS personnel'[9]. DLAS, however, has a cordial relationship with GLA and through its education sub-committee, seminars, workshops and conferences are organized from which faculty members and students benefit.

Evidence shows that librarians, documentalists, archivists or information professionals working in Ghana assume greater responsibilities with difficulties because they have been trained to work in specific fields. The reason is that now they are assigned new roles – taking part in panels, advisory councils and committees in various technical, planning and decision-making areas. They participate in research/training teams and are found in management, policy formulation and political positions. These current developments indicate an urgent need to review the curriculum in the department. Training programmes, methods and materials should be continually revised, adapted and updated to the expressed information changes and requirements of Ghana. DLAS should provide several specializations at both academic levels so that students can have a large choice depending on their personal aspirations, interests and capacity. In other words, DLAS should offer programmes that will prepare graduates for the emerging market in information work in industry, large firms, government departments and para-State bodies, so that they will no longer be confined to the traditional library market. It has been observed that DLAS does not offer a wide range of courses to meet this new demand even though several writers have expressed this need for curricular changes.

IFLA standards strongly emphasize continuing education as part of the training school's curriculum to keep practising information professionals abreast of their areas of specialization. These two issues have, over the years, attracted comments from all who are interested in the 'information industry' and yet nothing or very little has been done to effect the necessary changes.

Apart from the reason of lack of adequate human and material resources to execute the changes, the major obstacle lies with the Academic Board of the University. In fact, any change in the academic or professional curriculum of all departments in the university is subject to the approval of this Board which is rather bureaucratic in nature.

Conclusion

The basic objective of DLAS is to equip a core of information professionals with the necessary skills to support the educational, cultural and economic growth of a developing country like Ghana. But in spite of the efforts that have been made to develop library, archive and information education in Ghana at the graduate level, a lot more needs to be done to improve the situation.

The general inadequacy of information, materials and equipment, poor infrastructure, shortage of highly qualified library/information science educators, absence of an indigenous professional literature and paucity of funds are the major obstacles to the growth of this important component of the 'information industry', These obstacles have been persistent for a number of years and will definitely have to be tackled by all concerned citizens. Governmental support is paramount, and a lot of work needs to be done by the library and information professionals since the importance of information to national development is increasingly being recognized within Ghana.

In spite of these problems and issues raised, the DLAS has been a great force in the development and enhancement of the library profession in Ghana.

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Incorporating abstract generation into an online retrieval interface for a library newspaper cutting system

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Abstract

The newspaper is a very widely used medium for transmitting news and information in today's society. Some of the published information is very important and therefore required to be kept for future reference. The cutting and subsequent retrieval of newspaper articles is a tedious process. The retrieval process is also very laborious. Electronic newspaper cutting is required to replace the manual process. A library newspaper cutting system was developed at Nanyang Technological University, Singapore. The system enables librarians to cut, index and store news articles interactively. Readers can retrieve news articles via World Wide Web (WWW) browsers. Different abstract generation techniques, including location method, indicative-phrases, keyword frequency and title-keyword method, are incorporated into the retrieval interface to filter out irrelevant news articles. In this paper, different abstract generation techniques and their effectiveness as a means to generate indicative abstracts for news articles are discussed.

Introduction

Libraries (university or public) are responsible for keeping and maintaining newspaper articles. In the Nanyang Technological University Library, Singapore, newspaper articles are read, selected, cut, indexed and filed by a librarian manually every day. The newspapers considered for cutting include local newspapers and some foreign newspapers which could be printed in English, Chinese or other languages. Currently, a paper cataloguing and filing system is used to store all these newspaper articles which are indexed manually in English. The indexing process is tedious and requires human expertize. The retrieval process is also very laborious. The reader is required to go through a manual card indexing mechanism in order to retrieve a newspaper article. Related articles based on the same topic or keywords from different newspapers can be retrieved. In time, the size of the filing system grows, making the manual system more difficult to maintain. Electronic newspaper cutting is therefore required to replace the manual process.

With the advent of computer technology and the Internet, it is possible to automate the newspaper cutting and retrieval processes over the Internet[1]. We have developed a newspaper cutting system for managing newspaper cuttings. The system enables librarians to cut, index and store news articles interactively. Readers can retrieve news articles via World Wide Web (WWW) browsers such as Netscape[2] and Mosaic[3].

[redacted]

method, indicative-phrases, title-keyword method and keyword frequency into the retrieval interface. Abstract generation will automatically produce an abstract by extracting a set of verbatim sentences from the news article. This will form an indicative abstract to give the prospective reader an idea of the contents of the news article, through which he or she can then decide whether to read the full-length news article. This is to help the reader to filter out irrelevant news articles without having to review the entire article. It must be noted, however, that the abstract is not meant to be a critique of the paper whereby transformation of the text is required. The system also provides the flexibility to allow readers to select the abstracting technique to be used during retrieval. This paper will focus on discussing the incorporation of abstract generation techniques into the retrieval interface and its effectiveness as a means of generating indicative abstracts for news articles.

Electronic newspaper cutting

Figure 1 shows the electronic newspaper cutting process which cuts certain news articles from a newspaper page. An automatic block segmentation process is developed which segments the article using the horizontal (HPP) and vertical project profiles (VPP)[4]. The purpose of this process is to identify automatically the blocks belonging to an article. The user can define an entire article by moving the mouse to the top left-most position of the article, pressing the left mouse button, dragging

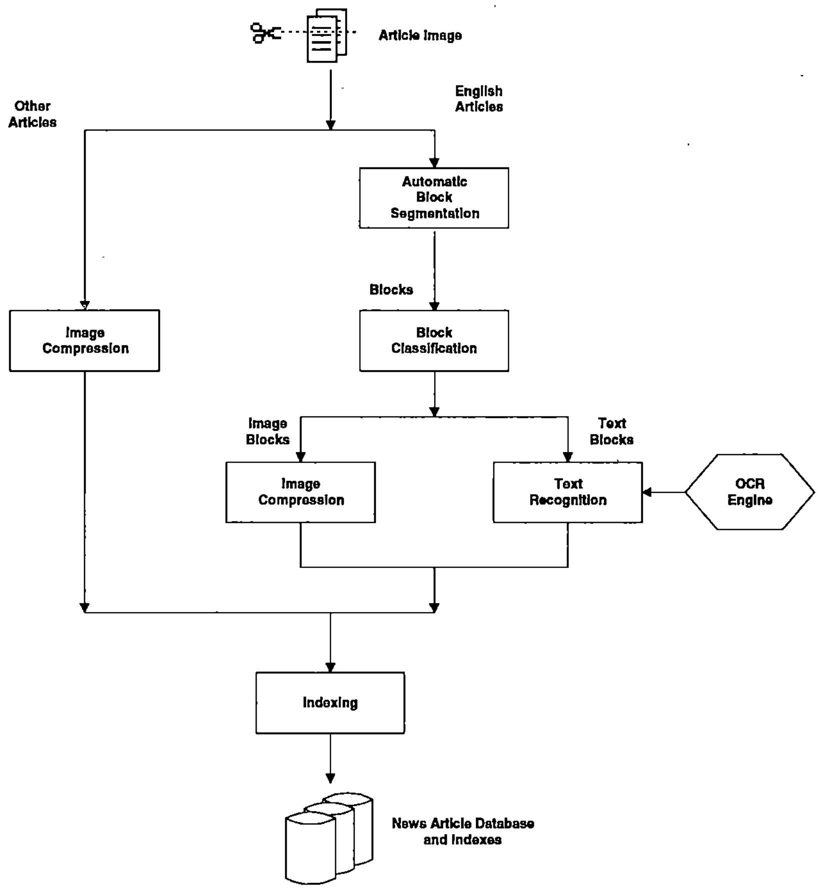


Figure 1. Newspaper cutting process

rectangular blocks automatically. These rectangular blocks may contain pictures, title and text body which will be classified automatically according to their image features.

The identification of pictures or photographs is based on a very simple method. Once a block has been automatically segmented, the number of black pixels inside the block is counted and the ratio of these black pixels against the area of the block is then calculated. Using the knowledge that the ratio of black pixels for a text block is usually not high, the block is regarded as containing photographs or pictures if its ratio of black pixels exceeds a certain threshold. Once the pictures and photographs have been identified, the rest of the blocks would then be the text blocks. To identify the title block, the text blocks are compared against each other and the block that contains the greatest sentence height, which reflects the largest font, is selected as the title text. The rest of the blocks are then identified as the text body.

The text blocks are then translated into text data using a commercial OCR engine called Calera produced by the Calera Corporation The picture blocks are saved as image data. At this point, the size of the news articles is much smaller than the original captured images.

The news articles can be indexed semi-automatically. Full text indexing is supported together with user-provided information regarding the news articles such as the name of the newspaper and date. However, indexing needs to be done manually for non-English (Chinese or others) news articles. The user needs to input the name of the newspaper, date, title and selected keywords of the news article. Thus, all the articles, both English and non-English, are indexed through English keywords. To generate indexes in the semi-automatic indexing method, a lexical analyzer, a stoplist and a stemming process are developed. Lexical analysis is the process of converting an input stream of characters into a stream of words or tokens. Tokens are groups of characters with collective significance. Lexical analysis produces candidate index terms that may be further processed, and eventually added to indexes. In this system, candidate index terms are checked to see whether they are in the stoplist. Stoplist words such as *a*, *is*, *are*, *an* and *the* are known to make poor index terms, and they are immediately removed from further consideration as index terms when they are identified. After the stoplist words are removed, the index terms of the article will undergo a stemming process. Thus, words which are morphologically related are abbreviated to the suffix of a word. For example, words like *expect*, *expected*, *expecting* and *expectation* can all be stemmed to the root word *expect*. Weight assignments to keywords are also incorporated to improve the retrieval performance based on the frequency of occurrence of the keyword in the article.

All the indexes, news text and pictures (or image data) are stored into a database system. Non-English news article images are compressed before storage. The purpose of the image compression is to reduce the size of the news article images, thereby minimizing storage requirement. Currently, news article images are compressed using the CCITT Group 3 compression standard[5]. However, many other image data compression algorithms can also be applied. Decompression is needed to restore the compressed news article image so as to display it on the computer screen. Pictures in English newspaper articles can also be compressed before they are stored in the database.

Abstract generation techniques

There are two approaches to automatically constructing a short abstract from a news article. These are automatic text summarization and automatic text extraction. Automatic text summarization relies on artificial intelligence and natural language processing to derive an understanding of a text document. Such an understanding is then used to produce an original summary of the document. This approach is necessary for producing critical abstracts, since a critique of the original document requires first an understanding of the document. Text understanding is a very difficult problem. A central issue in text understanding is knowledge representation. Some examples of knowledge representation are text content representation, linguistic (syntactic and semantic) information representation and domain knowledge representation. Automatic text summarization systems in existence today are predominantly domain specific systems. SCISOR[6] and SACD[7] are examples of systems which perform abstraction based on natural language processing. These systems have one thing in common and that is they are all based on domain-specific areas. This is understandable since natural language is by nature ambiguous. Thus, a system which may perform well in a very specialized area may produce poor results in another.

The pioneering experiment on automatic text extraction was reported by Luhn[8]. Since then, many varied approaches have been proposed by researchers[9,10] and have demonstrated considerable potential. The general approach to automatic text extraction starts with the generation of a list of keywords (using stoplist words) from a document. A sentence score is then computed for each sentence based on this list of keywords. The process ends with the construction of an extract containing the higher ranked sentences. In this research, we focus on developing automatic text extraction techniques for abstract generation.

Different abstract generation techniques[11] are incorporated into the system. These techniques process the news article database created during the electronic cutting process on the basis of location, indicative phrases, keyword frequency and title-keyword methods as follows:

- **Location method**: this method is based on the premise that the amount of information a sentence conveys can be inferred from its placement within a news article. For example, the first sentence in a paragraph is reputed to be the most significant. In addition, the location method also makes heuristic decisions. For example, the first sentence of the first paragraph may be deemed to be more important than the first sentence of the middle paragraph of the news article.
- **Indicative-phrases**: these are constructs such as, 'the aim of this report is', 'the objective of the present investigation is to determine' and 'in conclusion'. The usefulness of these phrases for sentence extraction lies in their explicitness in stating the subject matter of the document. Although, at first glance, there appear to be many different variations of such phrases, it turns out that there are only seven or eight distinct types. Each type is identified with reference to a template, hence allowing substitution of alternative words or phrases. Indicator-phrases state clearly the content, motive and findings of the news article. Using this approach, an overall picture of its material may be extrapolated from the extracted sentences, even without reading the full news article.
- **Keyword frequency**: this method looks for keywords that reveal important concepts within each sentence. There is an assumption that a sentence containing a number of frequently referred-to information words is likely to be an important clue to the news article's content. In this approach, a concept weight is defined as the frequency with which the concept occurs in the input text. An arbitrary threshold needs to be established to exclude those concepts whose weights fall below this threshold.
- **Title-keyword**: this method is based on the conjecture that sentences containing words that also appear in titles, sub-titles, captions and bibliography, notwithstanding null words, are more likely to be topic sentences. Hence, they are assigned higher weights.

Retrieval interface

Figure 2 shows the architecture of the retrieval interface which consists of three major components: abstract generation, retrieval engine and a HTTPD server. The HTTPD server adopted is called Windows httpd developed by Bob Denny (URL:http://www.city.net/win-httpd/). The browsers (e.g. Netscape or Mosaic) communicate with the Windows httpd using the Hypertext Transfer Protocol (HTTP). Hypertext is a concept of organizing and viewing information. Hypertext contains hyperlinks that are connections to other documents available on the Internet. By selecting a hyperlink, a user can go from one node to another. Application programs can be executed and linked to the Windows httpd via Common Gateway Interface (CGI). In Figure 2, the abstract generation and retrieval engine components are implemented as CGI programs.

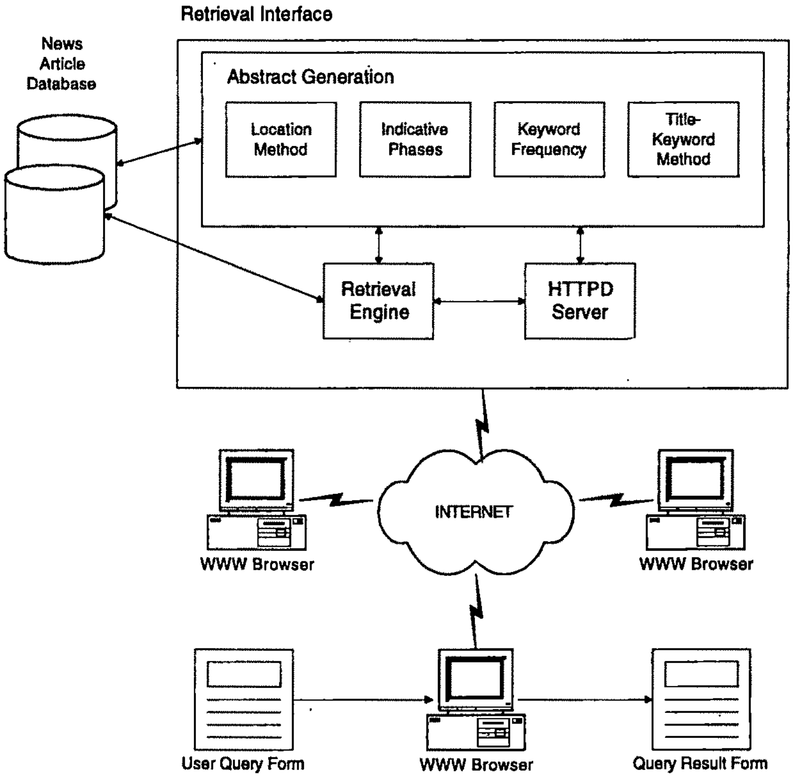


Figure 2. Architecture of the retrieval interface

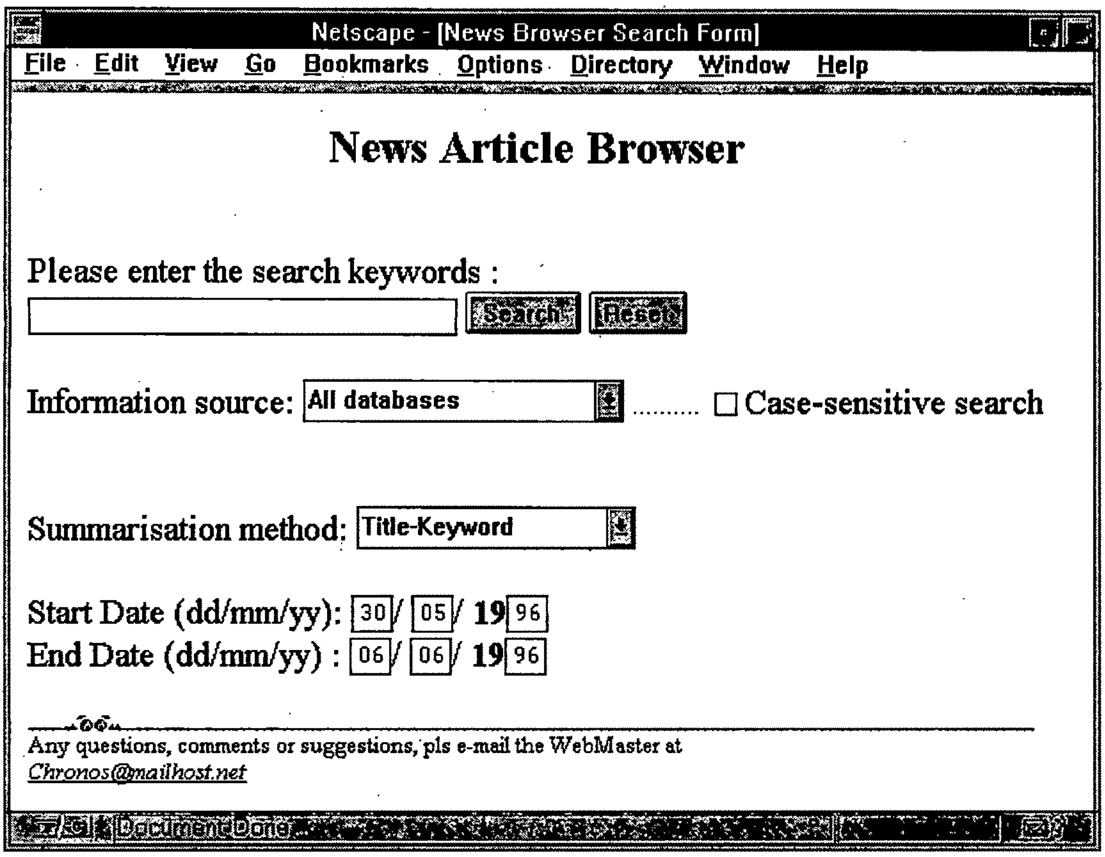
User query form is an user input interface to allow a user to key in keywords for searching news articles. It is written in Hypertext Mark-up Language (HTML). The format is similar to those forms available in most common search engines. There are two reasons to follow this format. Firstly, this is to conform to the WWW standard. Secondly, the user can appreciate a familiar user interface better. By using the user query form provided, the user can formulate queries to retrieve the stored articles in an efficient manner. The user query form allows the user to input keywords, name of newspapers, start and end date, and the abstraction technique used for retrieval. Conditions having multiple values associated with a single attribute are either joined together with an AND or OR operation. The Boolean search method is used once the input query is accepted.

An example of the user query form is given in Figure 3. The query form is essentially a WWW page. The top section is the page header which contains a page title. In this header section, the page title 'News Article Browser' is shown. Next is the body of the page which contains the main bulk of the user input. The user input is sent to the retrieval engine for processing. The first item in the form is the text box. It receives keyword input used for searching. Keywords can be joined using Boolean operators such as AND and OR. The next item is the information source. It allows users to select the newspapers from which the articles are retrieved. The user can also select ALL which means that news articles from all the stored newspapers are to be retrieved. The summarization method gives the option for the user to select the abstract generation technique to be used. Once chosen, the technique will be used to generate the abstract for the news articles. Then the first 40 words of the abstract will be displayed in the search results. The techniques supported include the location, indicative-phrases, keyword frequency and title-keyword methods. Finally, the users can set the start date and end date of the news articles to be searched.

The Retrieval Engine receives the keywords and other input from the HTML form in the user query form. The system then retrieves news articles in a query result form based on the Boolean search of the input query. The query result form displays a list of retrieved articles as shown in Figure 4. Titles and short abstracts of the news articles are also displayed. The abstract generation technique chosen will generate and extract the first 40 words of abstracts dynamically and display these together with the list of retrieved news articles. Users can also decide whether to view the full abstract on the screen. The full abstract generated is limited to a maximum length of 30% of the original news article. If the reader decides to read the news article, he can then click on the title to view the full article.

Performance evaluation

In this research work, different abstract generation techniques have been incorporated into the retrieval interface of the system. The following evaluation has been carried out to study the effectiveness of the different abstracting techniques as a means to gen-


Netscape - [News Browser Search Form]
File Edit View Go Bookmarks Options Directory Window Help
Search
Reset
Document: Done

News Article Browser

Please enter the search keywords :

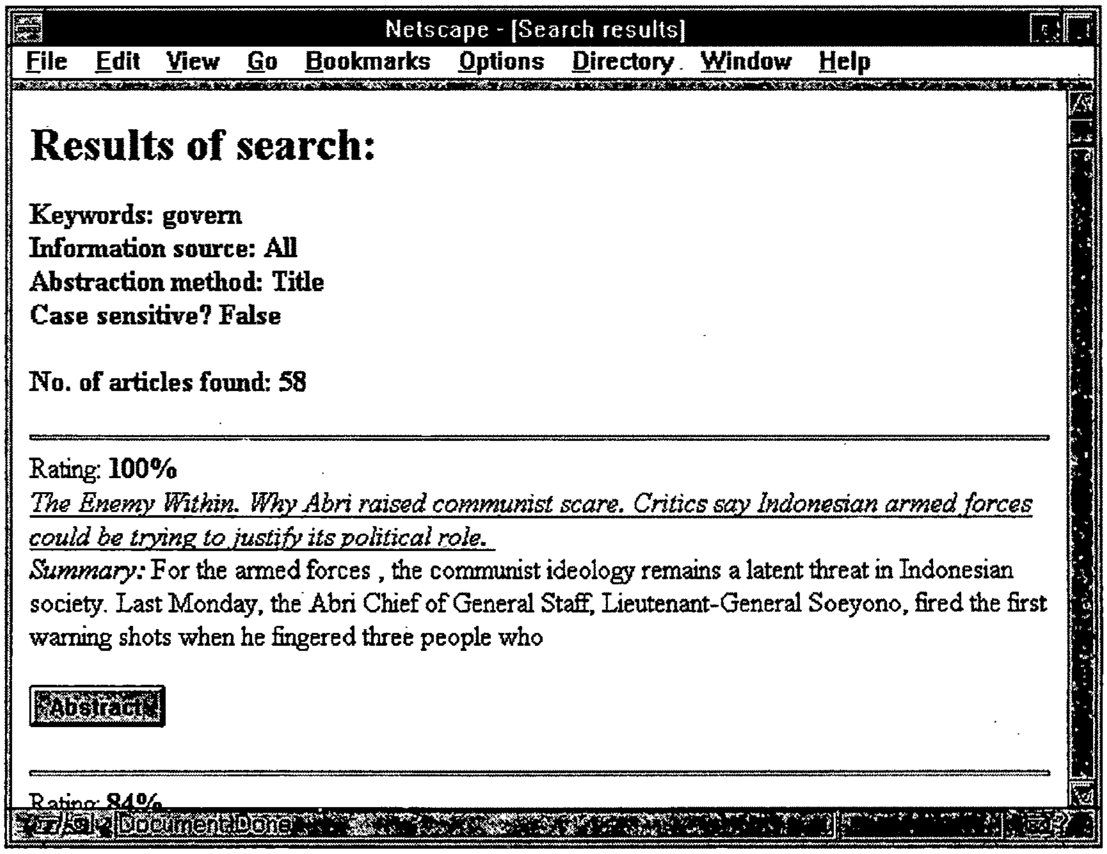
Information source: All databases .... ☐ Case-sensitive search

Summarisation method: Title-Keyword

Start Date (dd/mm/yy): 30/ 05/ 1996
End Date (dd/mm/yy) : 06/ 06/ 1996

Any questions, comments or suggestions, pls e-mail the WebMaster at
Chronos@mailhost.net

Figure 3. User query form


Netscape - [Search results]
File Edit View Go Bookmarks Options Directory Window Help
Abstract
Document: Done

Results of search:

Keywords: govern
Information source: All
Abstraction method: Title
Case sensitive? False

No. of articles found: 58

Rating: **100%**
The Enemy Within. Why Abri raised communist scare. Critics say Indonesian armed forces could be trying to justify its political role.
Summary: For the armed forces , the communist ideology remains a latent threat in Indonesian society. Last Monday, the Abri Chief of General Staff, Lieutenant-General Soeyono, fired the first warning shots when he fingered three people who

Rating: 84%

Figure 4. Query result form

	Title Method	Location Method	Keyword Frequency	Indicative-Phases
Expert I	55.7%	55.3%	38.4%	16.3%
Expert II	53.9%	60.8%	47.5%	13.0%

Table 1. Relevance of different abstract generation techniques

erate indicative abstracts for news articles. The criteria used to ascertain the effectiveness of abstract generation methods is relevance. As mentioned by Saracevic[12], relevance has been used as an evaluation criterion in an overwhelming majority of similar studies. In this study, we define relevance as the percentage of correspondence between the sentences extracted by the system and those extracted by human experts.

Forty-eight newspaper articles were assessed. The news articles were taken from local newspapers and reports from foreign news including the *Herald Tribune*, the *Asian Wall Street Journal* and the *Financial Times*. The evaluation was conducted in two stages. In the first stage, the news articles were given to two human experts. Each manually summarized the selected articles. On average, the length of the manually-obtained abstract was about 25% of the original news article. The second stage involved generating abstracts using the different abstract generation techniques. The results of each of the techniques were compared with the human-produced results.

Table 1 shows the relevance of different abstract generation techniques as compared with the two human experts. The location method scores better than the other methods. This is due to the fact that entire paragraphs often contain only one sentence. This findings is consistent with results reported by Baxendale[13] which indicated that about 85% of relevant sentences can be found in the first sentence paragraphs.

In contrast, the indicative-phrases method appears to have little impact. This could be due to the fact that news articles contain fewer indicative phrases as compared with technical papers or scholarly essays.

The title method also yields promising results. This supports the hypothesis that words appearing in the title sentences are more important than other keywords, and, hence, should be given heavier weighting. In comparison, the keyword frequency method does not fare as well since it selects sentences from any part of the news article rather than by locality. The criterion for selection is difficult to determine. Other researchers have for many years used a keyword frequency of 2 or 3 occurrences to select sentences. However, for news articles, the results vary from either no sentences being selected or too many sentences being selected.

In addition to these abstract generation techniques, another form of abstracting is displaying the first 40 words of the original news article. This is commonly used by most Internet search agents. For this technique, the average percentage of relevance obtained was 37.9%. Thus, both location method, title method and keyword frequency perform better than just displaying the first 40 words of the original news article.

Conclusion

In this paper, we have discussed the incorporation of different abstract generation techniques, including the location method, indicative-phrases, title-keyword method and keyword frequency, into the retrieval interface of a library newspaper cutting system. The system was developed under Windows 3.1 environment. The retrieval interface allows readers to retrieve news articles via World Wide Web browsers. Dynamic abstracts are generated to help the reader to filter out irrelevant news articles without having to review the entire article. The system also provides the flexibility to allow readers to select the abstracting technique to be used during retrieval. In addition, performance of the system is also analyzed based on the different abstract generation techniques. It was found that both the title keyword and location methods produce high relevance among the other abstracting techniques.

This work can be further improved by enhancing the system in the following two areas. Firstly the abstract generation techniques can be further studied and tested for their suitability for different subject classifications of news articles such as financial news, sports news, etc. The focus of this work is to determine the best abstracting technique to be used for a certain news classification. Secondly, a more flexible retrieval model such as neural networks instead of the Boolean search model can be incorporated into the system to improve its retrieval accuracy.

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Veterinary information: sources and use

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Abstract

This paper discusses the sources of information available for veterinary science, and their use by practitioners. It is divided into three sections: a background discussion, based on a selective literature survey; a report of a survey of information use by veterinary surgeons; and a description of Internet resources serving this area.

Literature background

The focus of this study is on the information environment of veterinary professionals in the UK and by implication in the developed world generally. Veterinarians face particular problems in developing countries (see for example Umbima 1995, Westhuizen and Miller 1995, Nweke 1995, Nweke 1993), but these are not considered here.

Information services for veterinary practice have evolved over a long period into a complex information environment (Gray 1976, Rajasekharan 1983); the first abstracting service in veterinary science, *Jahresbericht Veterinaermedizin*, commencing in 1881. While traditional library services remain of importance, both in terms of large library systems (Larsen 1995, Potokova 1995, Harris 1994, Fackler 1994), and individual practice libraries (Raw 1987) electronic information sources have been developed from the earliest days of such systems to meet specific veterinary needs (Self 1986, Nielsen 1985). These include both general bibliographic databases such as *CAB*, *Agricola*, *Medline* and *BIOSIS*, available online (Potokova 1995) and on CD-ROM (Csery and Tapolcai 1994), and specific bibliographic systems, such as the *VETDOC* service from Derwent Publications, and the *VETCD* and *BEASTCD* subsets of the CAB database dealing with veterinary subject matter (Lee 1993). Factual databanks, such as the *EAAP* database which monitors genetic diversity of livestock breeds in Europe (Simon 1994), or an image database for veterinary anatomy information (Snell *et al.* 1991), are of increasing importance. Audiovisual resources appear to be of particular importance in this subject field.

IT systems generally are growing in importance, for example in the use of information systems to aid diagnosis (Revie *et al.* 1994, White 1985), and multimedia database teaching tools (Giovanetti, Burg and Radigon 1994, Fawver *et al.* 1990), and are impacting on 'traditional' library/information work. Funkhouser (1995), for example, reports on the appointment of a 'hybrid' librarian/informatics officer in a veterinary information service. Attention has been given to problems of knowledge representation in this area, both in the theoretical area of semantic languages such as SNOMED (Rothwell 1995) and in pragmatic issues of library classification (Pelzer 1993).

Veterinary practitioners in the UK have access to the same range of information resources as other scientifically grounded professionals: books, journals, secondary sources in printed and electronic form and information from associations and other sources of expertize (Gibb 1990); increasingly, Internet must be added to the list. Despite this wealth of resources, Pelzer and Leysen (1987) found that US veterinary students were leaving college largely unprepared for finding information on new products and procedures.

As with other professions, books are still regarded as a key resource. Pelzer and Leysen (1991) showed that 80% of practitioners used books as their main source of information in critical care situations, while Raw (1987), suggested that the average UK veterinary practice spent between £50 and £100 per year on books (a figure presumably now increased by inflation).

Information sources and information management might be expected to be crucial components of continuing professional development for veterinary specialists. In a report on this area, for the Royal College of Veterinary Surgeons, Connor (1989) found that 90% of her sample of vets carried out some form of journal scanning or equivalent 'informal development' during the course of a month. Lesser numbers referred to specific journal or textbook material, or sought information from colleagues. Half claimed to maintain, with varying degrees of conscientiousness, some form of information system of relevant literature.

User survey

In order to obtain a 'snapshot' picture of information seeking behaviour among veterinary surgeons in the UK, a survey based around a short questionnaire was devised. One hundred questionnaires were sent to veterinary practices throughout Britain, the only qualification being that areas in close proximity to a large veterinary library, at an academic institution or Royal College, were avoided, since it was clear from initial

Aslib Proceedings, vol.48, no.11/12, November/December 1996. pp.266-270

soundings that these resources were heavily used by veterinary professionals in the vicinity. Fifty-seven questionnaires were returned, a response rate better than most surveys of this nature. Of these, 65% were from mixed practices, 26% from small animal practices and 9% from large animal practices, a reasonable reflection of the total population. The only difference seen in the survey results was that mixed practices tended to have a larger number of books in their practice library, reflecting the wider variety of species to be dealt with. Otherwise there was little evidence of clustering in practices' information behaviour. One practice appeared to be particularly information conscious, with a larger number of books and journals, greater use of professional libraries, and greater awareness of electronic sources; one appeared the opposite, making little use of any formal information sources. The rest fell on a spectrum in between.

All except one practice had a library of books, varying in number from below 10 to over 100. Large animal practices typically had 10-25 books, small animal practices 25-50, and mixed practices 50-100. This compares with Raw's survey (1987) which showed most practices having either between 10 and 30, or between 40 and 50 books in their collections.

All practices received some journals, the *Veterinary Record* being almost universal reading; no other journal was taken by more than half of the responding practices. The next most popular journals, taken by 20% or more of the respondents were:

Journal of Small Animal Practice
Veterinary Times
Veterinary Practice
Equine Veterinary Journal
British Small Animal Veterinary Association Journal

A total of 59 journals, including the above, were taken by a least one practice; most of the practices took 3 or 4 journals.

The great majority of practices used a computer, generally for a variety administrative and accounting tasks (one commendably honest respondent included its use for the Flight Simulator game). Few made use of the computer for storage and/or retrieval of professional information. Only 10% of the respondents were aware of specific electronic information resources: most widely known were the CAB databases and the proprietary Vetstream system, while a few respondents had heard of *Biosis*, *Medline* and *VETDOC*. This lack of awareness of digital information sources is somewhat surprising, perhaps indicative of the pragmatic nature of much of veterinary work. It may be expected to change as newer recruits join the profession with greater IT and information seeking experience from their professional education.

Virtually all practices made some use of veterinary libraries for document supply and, generally infrequent, literature searching. Most popular was the Royal College of Veterinary Surgeons' Library, used by over half the practices; this library is open to all members of the British veterinary profession, though few visit in person, and provides book loans, photocopies and literature searching services, of a very varied nature. This library was followed in popularity by that of the Ministry of Agriculture, Fisheries and Food, used by just less than half. Libraries at universities with veterinary schools were also used, to a smaller extent.

When asked for opinions as to future needs for information provision for veterinary professionals, 14% expressed complete satisfaction with present provision, again suggesting that a proportion of the surveyed group have very limited information consciousness. Overall, one third were happy with the amount of information available to them, and the means at their disposal for obtaining it; while two thirds expressed some degree of dissatisfaction. Many of the respondents commented that a major problem is time for reading, with too much information available. Several commented that they did not even have time to read the *Veterinary Record* thoroughly. Quick and easy access to information is paramount, with the demands of the job leaving little time for the 'luxury' reading and professional updating.

The *In Practice* supplement to the *Record*, designed as an easily assimilated digest of current information, was highly regarded by many, and clearly used as their sole source of professional updating. Several respondents suggested that audiovisual materials are particularly useful for purposes of information presentation for veterinarians, especially audiotapes which can be assimilated during the many car journeys which are a part of their normal day. The inadequacy of electronic materials was a fairly constant theme, though this must be set against the general apparent lack of awareness of current resources; cost of access came across clearly as a major inhibiting factor to wider use.

In summary, this small-scale survey showed British veterinarians to be rather pragmatic users of professional information sources, making use of a limited range of sources, and placing a premium on quick and simple access to information. It was clear that a majority of the respondents were aware that there was a good deal of useful information available, to which they did not have convenient access.

Internet usage

Given the rather limited take-up of electronic information delivery in the veterinary area, it is initially surprising to see the amount of apparently relevant material on the Internet, particularly the World Wide Web. However, by no means all of this is professional quality material, nor of value to the practitioner. A good deal of hobbyist material relating to animals is present on the Internet, 'Pets on the Net' having become one of the more popular parts of cyberspace. In addition to this, there is a considerable amount of material of professional interest, largely presented by academic institutions and by professional associations. The listings given below are representative, rather than selective, and are presented with the usual caveats about the fluid nature of Internet resources.

There are a number of well designed directories and guides to sites in this area, as listed below. The first three sites serve as well-constructed introductions to the nature of material available, particularly with a professional orientation.

http://www.src.gla.ac.uk/users/club02/vet_central/default.html
Vet Central; Veterinary Internet Guide

http:/www.mother.com/~vin/
Veterinary Information Network

http://netvet.wustl.edu/
NetVet; veterinary resources

http://brise.ERE.UMontreal.CA:80/~jettejp/
Les sources d'information en médecine veterinaire

http://www.monmouth.com/~altvetmed/
Alternative Therapies in Veterinary Medicine

http://cahpwww.nbc.upenn.edu/vetmed/vetmed1.htm
Directory of Veterinary Schools Worldwide

http://www.york.biosis.org/ahis_uk/UKVETSCH.htm
Directory of UK Veterinary Schools

http://duke.usask.ca/~ladd/vet_libraries.html
Directory of Veterinary Medicine Libraries Worldwide

http:/www.cbsg.org/cbsg68.htm
Global Zoo Directory (from Conservation Breeding Specialist Group)

http://www.york.biosis.org/ahis_uk/
Directory of Animal Health Information Specialists in the UK

Veterinary sections of more general directories include:

http://netvet.wustl.edu/vetmed.htm
The World Wide Web Virtual Library: Veterinary Medicine (Biosciences)

http://www.tiac.net/users/sbr/animals.html
The World-Wide Web Virtual Library: Animal health, well-being and rights

http://www.yahoo.com/science/biology/veterinary_science/
Yahoo – Science:Biology:Veterinary Science

Sites describing the courses and other activities of academic institutions include:

http://www.gla.ac.uk/Clubs/UVZS/
Glasgow University Veterinary Zoological Society

http://www.liv.ac.uk/~molvet/vethome.html
Liverpool University Veterinary School

http://www.york.biosis.org/ahis_uk/rvchome.htm
Royal Veterinary College home page

http://www.vet.cam.ac.uk/
University of Cambridge: Vet School

http://www.vet.ed.ac.uk/
The Royal (Dick) School of Veterinary Studies, Edinburgh

http://www.vu-wien.ac.at/
Veterinärmedizinische Universität Wien

http://numbat.murdoch.edu.au/
Veterinary Studies, Murdoch University, Australia

http://www.ovcnet.uoguelph.ca/HomePage.html
Ontario Veterinary College (OVCInfo) home page

http://www.vetmed.auburn.edu/
Auburn University College of Veterinary Medicine

http://www.vetmed.ufl.edu/
College of Vet Med, Florida University

http://zoo.vet.cornell.edu/
Cornell's College of Veterinary Medicine

and also of academic relevance is a directory of resources for computer-aided learning in veterinary science:

http://www.clive.ed.ac.uk/clive.html
CLIVE – Computer-assisted Learning in Veterinary Education

Sites hosted by governmental, professional and other organizations include:

http://www.cvm.fda.gov/
FDA Center for Veterinary Medicine

http://www.who.ch/programmes/cds/vph/activity.html
WHO Veterinary Public Health Programme

http://www.cbsg.org/
Conservation Breeding Specialist Group (CBSG)

http://www.liv.ac.uk/~dduret/beva/text/BEVA_HomePage.html
British Equine Veterinary Association

http://www.acmepet.com/aaha/
American Animal Hospital Association home page

Sites with a more popular orientation, but which might nonetheless be of some use professionally, are many; some examples are given below:

http://netvet.wustl.edu/e-zoo.htm
Electronic Zoo

This site has information on many animal species, e.g.

http://netvet.wustl.edu/dogs.htm
Electronic Zoo/NetVet – dog page

http://netvet.wustl.edu/cats.htm
Electronic Zoo/NetVet – cat page

Many sites deal with specific animals, particularly those popular as pets, e.g.
http://horses.product.com/
HORSES! on the Internet – EQUINET(™)

http://www.zmall.com/pet_talk/cat-faqs/www-list.html
List of feline sites

http://www.zmall.com/pet_talk/dog-faqs/homepage.html
Frequently asked questions from a newsgroup dealing with dogs

Reflecting the inevitable situation of any popular topic on the Internet some animal-related sites appear rather silly, e.g.

http://www.whitehouse.gov/White_House/Family/images/raw/socks-sitting-on-grass.gif
Socks, the White House cat

http://www.whitehouse.gov/WH/kids/html/pets.html
Pets in the White House (presented by Socks the cat)

http://queer.slip.cs.cmu.edu/cgi-bin/talktocat
Arexx Talk to Cat Gateway running on an *amiga* [talk to a cat in New Zealand via the Internet and a speech synthesizer...]

News groups dealing with various aspects of animal welfare are numerous. Those dealing with the health of pet species may be of some professional interest. Examples are:

news:rec.pets.dogs.health
dogs' health

news:rec.pets.dogs.info
general dog information

news:rec.pets.cats
cats as pets

news:rec.pets.birds
birds as pets

Conclusions

Veterinary information provision, as with many professional areas, is in transition, with a range of printed sources, developed over many years, being supplemented and, to an extent, challenged by electronic and audio-visual sources. As yet, digital sources appear to have made little impact on the work of the practitioner, but it may be that the influence of the Internet, with its multimedia capability, will change this.

Veterinarians are a pragmatic group of information users, placing great emphasis on rapid and convenient delivery of information. Providing these features, with the advantages of a digital format, will be the major challenge for information providers to this group in the next few years.

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Local poets and libraries

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Abstract
A survey by questionnaire was conducted in order to obtain details of criteria employed in libraries in the shelving of the works of local poets in local collections or on the main poetry shelves. The general extent of interest in book search and purchase of such works, and provision of venue facilities involving local poets reading their work were also determined. A considerable variation in shelving policy was found. More publicity for the local poet and his work is advocated, together with the ideal of large regional collections, such as achieved by the Northern Poetry Library.

Introduction

The author, with a lifetime of dedication to poetry, managing his own poetry magazine, *Ore*, producing small booklets for poets, and in other ways being conversant with the general poetry scene, has always been sensitive to the question of library publicity for local poets who are not nationally well known. Being made aware of some differences in approach to shelving in his own area, he decided to investigate the position by questionnaire directed to as many authority areas as possible and, in so doing, also to find out the general situation regarding the acquisition of their works and facilities offered for readings. The following report is based on replies received during 1995/6 from County, District and other authorities responsible for running branch libraries, with the occasional reply received from branch directly.

Positive replies were received from authoritative sources within the main areas of Cornwall, Derbyshire, Durham, Essex, Hampshire, Hereford and Worcester, Hertfordshire, Kent, London (Guildhall area), Monmouthshire, N E Scotland, Nottinghamshire, Northumberland, Somerset, Staffordshire, Suffolk and Warwickshire; also the Metropolitan Borough of Barnsley, the Districts of Kirkcaldy, Perth and Kinross, the Region of Dumfries; the City Councils of Manchester and Westminster; libraries in Kensington and Wakefield; also the Northern Poetry Library run from Northumberland Public Library and covering local poetry in the areas of Cleveland, Cumbria, Durham, Northumberland, and Tyne and Wear. Various authorities sending either negative replies or not replying in the given period were Bolton, Cleveland, Doncaster, Dorset, Fife, Greenwich, Gwynedd, Lincolnshire, Norfolk, Portsmouth, Rotherham, Skye and Lochalsh, Surrey, Swansea and West Sussex. Stamped reply envelopes were sent in all cases with the questionnaire, with a short CV of the author's work in poetry and his career to date, to emphasize that it was a responsible private survey. It was intimated that the replies would form the basis of a paper in a periodical, if accepted.

Of those answering negatively, time not available, under-staffing, local government re-organization, or the requirement of a fee, were among the replies. Demands on public libraries and their staff are obviously increasing, and the impeding factors were understood. With hindsight, some questions could have been better phrased to elicit crisper responses. The author would like to thank all who gave time to these replies, some of which were very full and helpful.

The survey

Question 1

State the criteria used for consideration of shelving local poets' books (a) in the local collection; (b) in the main poetry shelves. How much weight is given to poetry quality, imprint, local features within the poetry, book format (e.g. slim or thick volumes), whether the book is a donation or acquired by purchase? Are you happy for most of your libraries to shelve copies or would you seek to restrain acceptance to one or a few?

The more important of the questions for local poets hoping to see copies of their works in public libraries. Replies were widely varied, more than expected, and showed that a shelving policy within one library area often bore no relation to that in another area. Financial restrictions were often mentioned and must be considered as common factors throughout for purchases. Summarizing and classifying the replies, they included:

(a) Main poetry shelves would usually hold the work of local poets of known status in the wider poetry scene, i.e. in competition nationally.

(b) Main poetry shelves would include local poetry of attractive format, with no particular emphasis on imprint or quality. (One library area mentioned possible exclusion of imprints of 'vanity publishers'.)

(c) Main poetry shelves (no local poetry shelving available) contain also local poetry, with relaxation on format criteria.

(d) The works of local poets are stocked only if they contain local features, local history, etc.
(e) As (d), but imprint and format quality are important. Subject to these criteria, books could be on the local or the main shelves.
(f) Works of local poets which are shelved depend on the reputation of the poet and geographical relevance.
(g) Works of local poets on main shelves must match the quality of mainstream publishing. Local features in these works are not important. The local collection is for local history.
(h) Works of local poets are placed in a main collection if they have local connections or mention them. Branch libraries can acquire such poetry if relevant to their particular locality. There is no critical assessment of poetry quality or book format.
(i) There is a local collection in which the books of local poets appear if the poet either lives or works in the county, or the poet is concerned with the county.
(j) All publications by local poets are acquired, irrespective of content, quality of poetry, imprint, or quality of production. These are held centrally, and also locally where relevant.
(k) Local poetry is included in the main poetry sequence. If purchased, consideration is given to the quality of the poetry and the format. If donated, these considerations are relaxed and the work is shelved on trial.
(l) Only good quality poetry is stocked, having literary merit. The poorest local poetry is not stocked.
(m) London-based libraries only (unfortunately a small sample):
    (i) Local poets should have national stature for the general shelves. There is a local collection for work which contains special interests in London-related items (Guildhall).
    (ii) The works of local poets must have local interest (Kensington).
    (iii) The question of local poets does not arise for a cosmopolitan area (Westminster area, which includes Westminster (reference), and Marylebone, Charing Cross, Victoria, and Paddington Libraries).

Differences can be seen under the headings

Acquisition criteria: local poets

(i) No criteria. All local poets' works are acquired. (Also mentioned was the normal acquisition of two copies of the works of such poets for the local collection, with no problem of extra copies in branch libraries.)
(ii) Attractive format required, with possible exclusion of vanity imprints.
(iii) Some relaxation on format criteria – main shelves only.
(iv) Imprint and format unimportant if poetry contains local features.
(v) Poetry quality and format unimportant if poetry contains local features.
(vi) Poet lives or works in the county area or his poetry contains local features.
(vii) Local features not important. Quality should match books by mainstream publishers. Main shelves only.
(viii) Reputation of local poet and relevance of work to the area is important.
(ix) No poets in a cosmopolitan area can be considered to be local poets.
(x) All local poetry must be of good quality, with literary merit.

Even allowing for the fact that different areas have different needs and that, to some extent, there will be variations in replies dependent on whoever completes the questionnaire, the picture emerges that (a) if locally based poets produce work containing features relevant to the area (i.e. geographical, historical, etc.), then usually the quality of the poetry and the format of the book are unimportant; (b) in the absence of such features, usually the quality of the poetry, the status of the poet and an attractive format are looked for. On the other hand (c) there may be no applied criteria and the acquisition of copies may be more liberal, including extra copies for branches. Also (d), the qualifying definition of a 'local poet' is unclear – (does the poet work, or live in the area, was the poet born in the area; or did the poet, whether living in or perhaps out of the area, qualify as a 'local poet' for the reason that the work contained features of local history, happenings etc?). There is also the point (e) that if the poet lives in a large city and perhaps has been a 'local' in it while the city grew around him/her, then the poet loses such status and with it the facility of his or her works being shelved. In such a cosmopolitan environment, he or she becomes an 'endangered species'. Finally, it must be mentioned that some decisions as to what might constitute literary merit in local poetry, where looked for, might be of dubious value. Apart from the judgement of the librarian concerned, the poetry scene itself is rife with contradictions concerning what is meritorious, as, one might suppose, is the case for all the arts.

Question 2

Do you actively search for books by local poets or order any on sight of advertising literature?

Here the presentation of the reply introduced a discernable variation from the polarities of pure affirmation and negation. Some of the activities which did not seem to involve an all-round 'drive' to find works by local poets were downgraded to 'passive searching'. Results were rounded to the nearest 5% after classification.

Yes (including search and order for work by local poets who would qualify on account of

connections of their work with local history, events, etc., as well as that by locally based poets not carrying that qualification)	45%
Passive plus (some activity apparently of greater width than the following grade)	5%
Passive (apparently adequate activity but possibly a limited search)	30%
Passive minus (apparently passive note of advertisements only)	5%
No (no activity – lack of time, no particular interest)	15%

Question 3
If any of your libraries contain venues for lectures etc., how often do readings or exhibitions by local poets occur? If they do occur, is it because the organizer suggests it or does the library make a particular point of attempting to organize a poetry reading etc?

From replies to the first half of the question, a graded list with 'some' as a norm was constructed; 'many' would indicate about four or more meetings a year. For about half the replies, actual arithmetical answers were not given, and the degree of activity was estimated from the circumlocution. Approximate evaluations, rounded, were as follows:

None or rarely	20%
Mixed with other activities (prose, 'art', etc.)	15%
Occasionally	15%
Some (fair interest in readings)	30%
Several (above average efforts)	10%
Many	10%

Replies to the second half of this question showed that when local poets read in libraries, about 70% of readings were due to library initiative, with the remaining 30% ascribable to local pressure or initiative to obtain library venue access.

Question 4
State the criteria for obtaining poetry books for the main poetry shelves. If local poetry is included, is any attempt made to compare the quality of the work, as far as can be judged, with the nationally advertised works?

Scanning of main and subsidiary bibliographic sources was probably a pre-acquisition common factor, though only mentioned by two authorities. The main intention of the two parts of this question was, however, to obtain a better picture of the main shelves to which books by local poets were admitted. It was supposed that, even if a local poet was defined by his or her book contents relevant to local happenings, there could be room as well for such a book on the main shelves. The replies complete this picture more thoroughly than those to the first question of the questionnaire. There is a degree of 'cross-over'.

About half the authorities said that there would be a requirement of quality to match main shelf poetry, the other half judging that such a requirement was not entirely necessary. Additional points were that there would be less stringency over literary merit for local poets, and that a positive attempt was made to apportion books to the ethnic proportions of the local community.

Replies giving main-shelf criteria were as follows:

Importance of name of poet, the demand, amount of review publicity	40%
Quality of format	30%
Literary merit where mentioned Judged	20%
No judgement	5%
Book price	5%

Question 5
Would you feel you were doing a favour in shelving local poets, or attempting to keep a conscientious record of what happens in your locality?

Replies showed that most librarians were following policy as far as possible with respect to local poets and their poetry, and it is not intended here to differentiate the small variations in replies given.

Conclusions
The intention in the summer of 1996 was to wait for replies to the questionnaire from a block of London-based authorities, as it seemed important to discover if there was a difference in the policies towards local poets between city and country areas. Disappointingly, no replies were received and it was decided to complete this report without these opinions. Consequently, there are about eight or nine non-replying authorities additional to those mentioned in the introduction. This rather tipped the scales against a representative sample to work on; without sufficient information, the true picture is difficult to form.

Nevertheless, anomalies over the range of received replies were evident, and the dearth of London area information would not have reduced these, although the percentage figures would have shown some change, possibly for the worse, the 'local' nature of the poet being probably less valued as suburban conjoinment reaches saturation point in a city complex like London.

It was not clear from the occasional mention of lack of funds whether if such funds were available there would be extra cash spread as a significant allotment towards local poets' works. The low relative importance of these when funds have to be spread over a range of other subjects, let alone stocking mainline poetry, has to be an impedance. Ideally, it might be considered what could be done to aim towards an emulation of the caring and successful Northern Poetry Library, which provides adequate literature on its facilities and policies. This was created in 1968 with the aim of acquiring all books of poetry in English by living writers published in the UK. It provides information and borrowing support to those in the regions of Cleveland, Cumbria, Durham, Northumberland and Tyne and Wear. Special efforts are made to obtain books written by poets in these areas.

The funding practicality of setting up similar large regional libraries in other parts of the UK, with emphasis on local poets and their poetry, would appear daunting, but it is a worthy target for the acquisition of the works of such poets, who rarely appear on the main poetry shelves, much of whose works would be lost to posterity without this interest. As we have seen, the diverse criteria and policies of authorities taken separately need such a regional impetus to give a common direction towards the preservation of and interest in such work. Not only this, but we have passed the age of privilege and patronage when only the Byrons of the age were known poets. The publication explosion and the more egalitarian outlook in the arts should advance the status of the many living poets, whether or not establishment publishers garner their small marketable quota of poetry. It is they, the locals, who should in effect come to the fore on the library shelves, while they are writing now, preferably all gathered together in large regional collections.

It is evident from correspondence[1] that the concept of regional poetry libraries would be encouraged by the Arts Council of England subject to the strategic planning requirement of Regional Arts Boards. Financial assistance is more problematic given that the current literature budget could not sustain such an initiative. It remains to be seen whether the new Arts for Everyone scheme will enable lottery money to go towards such a development.

Following on from the concept of the large regional collection, local poets whose works are to be included should not suffer exclusion on the grounds that (a) the books contain no local geographical or historical interest, or (b) the books are not of that format or quality of content associated with productions of mainstream publishers. Quality of content is always a problem; we are no longer of an age when set pieces were the norm, and could be judged by the best reference works of the time, such as Brewer's volume[2]. Even with the burgeoning of good small-press poetry from such as Bloodaxe, whose list is prolific, The Rockingham Press, Peterloo Poets, Staples Press and many others, and press work associated with known magazines such as the Hippopotamus Press of *Outposts*, Carcanet linked with *PN Review*, Northern House associated with *Stand*, the Seren series with *Poetry Wales*, and so many others which are dedicated to bringing their poets to the attention of the public, and are not as hard-geared to profits as major publishers, there are huge gaps in satisfying demand through a relative bottleneck of poetry presses. Work spills over into private printings, not all of it bad, and also into the hands of the so-called 'vanity' publishers, who often praise the work and promise much in the way of sales which do not later occur. Some are better than others. Clifford[3] has considerable interest in these matters. The questionnaire replies referred once or twice to these publishers. Usually, for poetry, the librarian is logically justified in not shelving much of this type, but there are exceptions and a few of these publishers are used by local poets for passable work. Still with the concept of the mass collection of local poetry, there will be and will have to be the discards in the form of obvious illiterate rubbish or banal simplicity, and much of the vanity imprints, together with really objectionable formats. Otherwise choice must be wide ranging. The local poet is a local phenomenon in his or her own right, and deserves preservation at least up to decisions of an archival nature much later.

Unless they are permanent travellers or very temporarily within a particular community, UK poets will be local to a neighbourhood. It may be suggested that an habitual practice of *donation* of their work to the local library, whether from author or press, should be a normal code of conduct. It is a small price to pay to gift under-funded libraries with local work instead of sending a flyer or leaving them to scan the reference data. The publisher already has to send five free copies to the copyright libraries in addition to a copy to the British Library – a seventh copy to the library local to the poet is more useful to his community. The librarian, of course, is never bound to shelve such donations, but under the outlined relaxations, most local poetry should find a place. If there is also a link with local features, two donated copies would be the norm.

As neighbourhoods join to form bigger urban complexes as useful centres for literary festivals, many nationally known poets are 'imported' to attract the public (at Edinburgh, Swansea, Greenwich, Norwich, Barbican, Cambridge, and so on), which know less of their local poets than the 'imports'. Often the 'locals' will be organized into minor 'entertainment' groups, but on the whole there is far too much repetitive talent of national poets used as against local talent. It is suggested that there should be modifications, with also a saving to the available funds, involving more local performing poets. Authorities can be ignorant of their own local poetry scene, while knowing only the 'names' outside the neighbourhood. Excessive literary elitism here must be deplored. It may be good, time and again, for the retailers of the work of national poets, but some prominence to local poets would alert the community, send new readers to the local library shelves after the performance – which is good for local poetry, not for the coffers of a major publisher existing hundreds of miles away from the festival venue, who might not care much about poetry in the community.

As habitation complexes get larger, absorbing the suburbs, losing local villages in time in all but forgotten names, it is right to remember that the old ways of life lag behind the reconstructions which will eventually change the habits of the next generation. In this situation, local poets do not disappear under the foundations of supermarkets; they are mainly invisible to a busy populace, and it is this invisibility which, if allowed to continue, will define the local poet as the 'endangered species' earlier referred to. If he is not also a national poet or a 'name', he or she will destruct as a local poet, unremembered through any record, unless grandchildren resurrect their poetic grandparent in some booklet. This is where the large local regional collection is of great use; its scale of collection of the books of local poets, past and present, can over-ride the literary forgetfulness of even the largest city complex, with its tendency unintentionally to eliminate the works of local poets as fast as it forgets the villages it swallowed.

Use of poetry in libraries is briefly mentioned in a recent Arts Council of England survey report on poetry[4], which found that poetry in libraries was a source of concern for poetry organizations – libraries were cutting back on stock generally, with the result that poetry, and particularly new poetry, suffered. It was confirmed that there was a resurgence of interest in poetry on many fronts. From the seminars leading to the report, it was also noted that problems of getting work into print were small, but that not many of such publications were actually sold. The situation is a familiar one, exacerbated by the ease of production of masters and copies by methods not even thought of when letterpress was at zenith, and by the problems of distribution in still a thin market. It has to be faced that, for the average poet, the market rules sales of books with a hard rod. According to the report, there is evidence of at least 24 20th-century poets selling particularly well; from the sales point of view, some important factors were the profile and reputation of the poet, media attention, etc.

Resurgence of interest obviously leads to the lively and recently rising market at the top end of the 'names', and this end is broadening. It is, however, a fact that many competent poets who do not receive the benefits of public exposure through readings and other publicity modes, or who have not gained attention via literary prizes and possess other advantages (no doubt sometimes of working within the industry itself!) such as catching popular mood by word or in print, are disadvantaged. Unlike the good chess player, who has tournaments where the rules are the same for all, in which to be justified, success in poetry competitions, public exposure, and in the market-place, as parallels in the poetry scene, are flawed criteria, many times right but often wrong, especially when judged against the background of passing decades. It is still possible for the local poet to live in a vacuum from the point of view of his hard-copy output or notebooks of poetry, simply because the rules are flawed and depend on opinions in place and time. Let us call these 'local poets' and it becomes evident that a basic principle is the collection and storage of their books against the passage of modern times and local environment changes. That is, the large regional library complex, embracing many county areas.

In closing this article, I would like to pay tribute to the work of the Brentham Press of St Albans in producing under the general editorship of Margaret Tims, a county-by-county series, Poet's England[5a], featuring local and national poets and local poetry in its local history context, between 1976 and 1996 (continued to date for three northern counties covered by Headland Publications under other editorship[5b]). Let us hope that each library authority who reads this article will make sure that a relevant volume reaches some of its area libraries, preserving local poets and poetry.

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5b. Poet's England: 17. *Cumbria*; 18. *Lancashire*; 20. *Cheshire.* West Kirby, Merseyside: Headland Publications.

Correspondence

Sir,

We need idealists like Elspeth Hyams (*Proceedings*, September 1996), but sometimes idealism obscures hard reality. At least she has the grace to say that she is optimistic about the future contrary to *some* colleagues in the public sector (my italics). Her public library colleagues do not lack idealism or enthusiasm, but *do* very often find themselves the victims of local party-politicking, obsessions with fashionable management theories and, in some quarters, a blatant disregard for professional qualifications and experience. It is only too obvious in libraries where qualified librarians have been replaced by unqualified staff or those without relevant experience that the quality of service has suffered alarmingly. The parameters of a question and the scope and potential of available resources are simply not apparent. Recently I read in a local paper that protests about the redundancy of the borough's music librarian ('our wonderful music librarian', one correspondent said) were ill-founded because music enquiries would continue to be answered by other members of the library staff! Adequately? I doubt it. Another borough as a matter of policy (and, no doubt, in the questionable interests of political correctness) appoints non-librarians to work in its reference libraries. It is clear that the scope of the role and the skills necessary to handle enquiries have not been appreciated by those who formulate such policies. Unfortunately the public too readily accepts such standards as no more than they would expect, with the double result that qualified librarians are insulted and frustrated (what was the point of all the training and experience?) and confidence in the library is not enhanced. (For more in this vein, see my keynote address to the ISG's 1994 Study Weekend in *Refer*, 11(1), Winter 1995, pp.1-8.)

Some of us are fortunate enough to work in local authorities where this poison has not yet significantly penetrated – and it shows. In the City of London we offer a local service in theory, but a national one in practice, with a significant proportion of users coming from outside The Square Mile, either because their local libraries cannot satisfy their needs (owing either to lack of resources or inadequate exploitation of them by inexperienced staff), or because they *can*, but the potential enquirer does not *think* they can.

As to academic libraries, of which Elspeth Hyams speaks so fulsomely: they are chronically short of funds but subject to the demands of increasing numbers of students; so much so that their students become a burden on the public libraries as well (often far beyond their own local authority areas), to the detriment of those libraries 'legitimate' clientele – those who pay for the service through local taxes. In the City of London, some of those users have begun to voice their annoyance at services being seriously monopolized by students from far and near.

In a way the format of resources – print-based or electronic – is irrelevant if the operator cannot formulate such a strategy, assess the results (and discard them and start again if necessary) and present them in a comprehensible form to the enquirer. Human judgement is still essential at all stages, and those who think it is now all a matter of making a predetermined sequence of keystrokes on a computer are seriously out of touch with the real world. Books and databases are merely the means to an end – not mutually exclusive – each with its own advantages in different circumstances and, in practice, probably used in combination with each other, as appropriate, but useless or positively misleading without the direction of an imaginative, knowledgeable and experienced operator. If further evidence of the skills of the reference librarian is required, may I recommend Tim Owen's excellent *Success at the enquiry desk* (Library Association 1996; ISBN 1-85604-181-6); just the thing to open the eyes of those friends and relatives who give you an old-fashioned look when you say you're a librarian.

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